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COMPARISON OF NUMERICAL AND PHYSICAL HYDRAULIC MODELS, MASONBOR--ETC(U)

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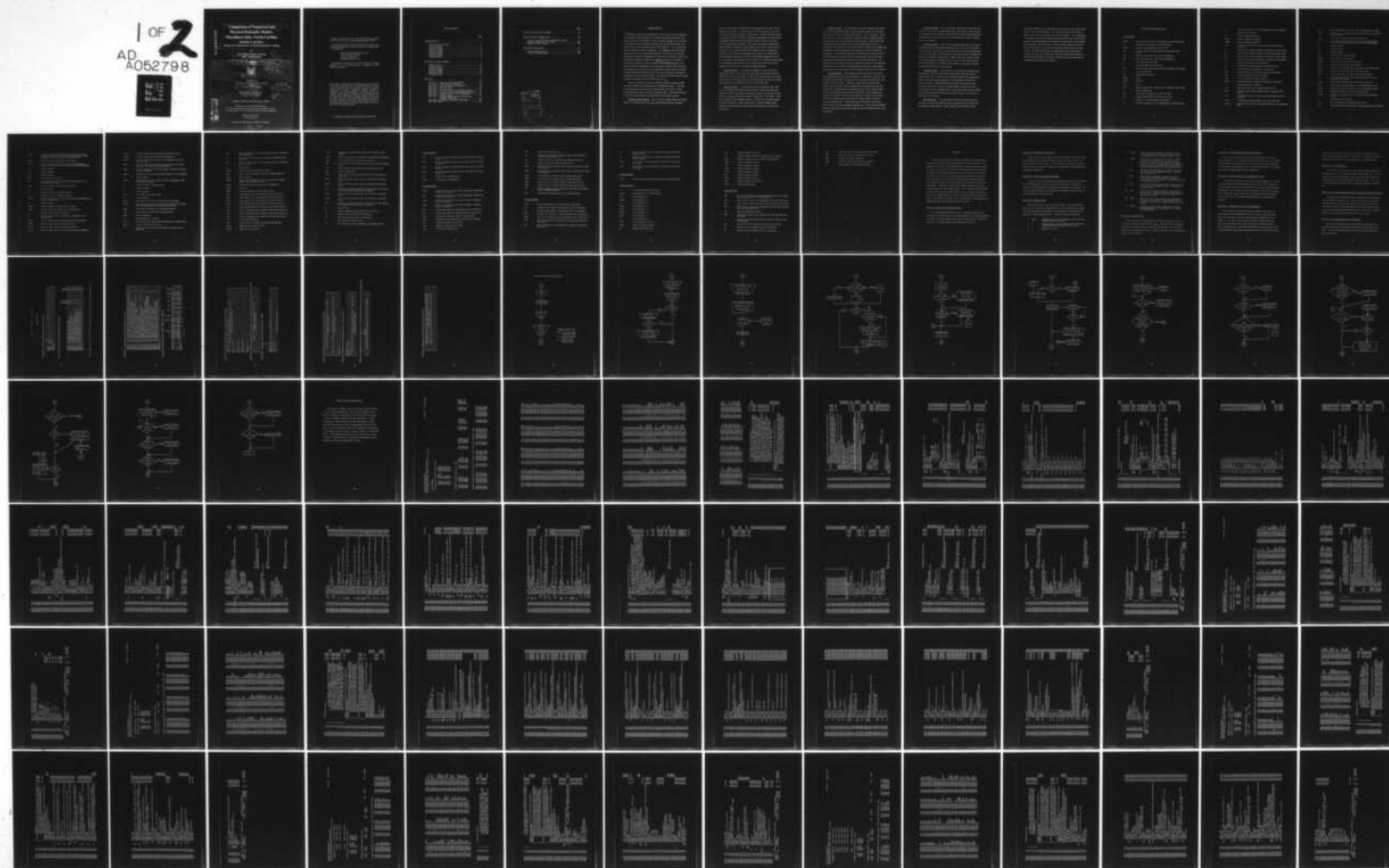
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**Comparison of Numerical and
Physical Hydraulic Models,
Masonboro Inlet, North Carolina .**

**APPENDIX 2, VOLUME 2 .
Numerical Simulation of Hydrodynamics (WRE).**

by

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and J. Dwight Reagan**

Final rept.

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GENERAL INVESTIGATION OF TIDAL INLETS

A Program of Research Conducted Jointly by
U.S. Army Coastal Engineering Research Center, Fort Belvoir, Virginia
U.S. Army Engineer Waterways Experiment Station, Vicksburg, Mississippi

Department of the Army
Corps of Engineers

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Cover Photo: Masonboro Inlet, North Carolina, 24 July 1974

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PROGRAM STRUCTURE

➤ HYDTID is constructed and formulated in such a manner that the sequential flow of program control necessary for solution using high speed digital computers can be easily understood. The basic computer language used is Fortran V and the model has been successfully applied using the CDC 6600 and 6400, the UNIVAC 1108 and 1106 and the RCA Spectra 70/45 computers. In its present form HYDTID is essentially machine independent. The computation time and storage depend on the size of the system being modeled, the mesh size and time step being used, the number of computational or water cells in the grid network, and the length of simulation time desired. Recent applications of the model to Texas bays have required as much as 150,000 words of memory and from 2 to 6 minutes of UNIVAC 1108 computer time to simulate one 25 hour tidal cycle. ➤ For the Masonboro Inlet problem, the coarse grid model required about four minutes of UNIVAC 1108 time to simulate one 12.5 hour tidal cycle and to generate the input flows for the fine grid sub-model. The fine grid sub-model required about 40 minutes of computer time to simulate one cycle. ←

Basically the model consists of an executive control program and eight subroutine packages for performing specific computational tasks. Input data to the program are read from cards or magnetic tape, and output is either printed, punched on cards, or written on magnetic tape. Detailed descriptions of the basic program elements are presented in the following sections.

Executive Control Program. This is the basic command element of Program HYDTID. All program control data, real system description data, and model

operation data required for computing tidal hydrodynamics are input into the program by this routine. Variables are initialized, constants are set, and a portion of the basic input data is printed out. At every time step, control is transferred from this routine to appropriate subroutines for calculation of instantaneous values of tidal amplitudes and flows, as well as net flows, net velocities and mean velocities. Input data are processed appropriately based on whether the program is being applied to the fine or coarse grid configuration. This element of HYDTID also transfers control to appropriate subroutines for printing tidal amplitudes and discharges for selected cells at specified time intervals, for storing instantaneous hydrodynamics for all cells on magnetic tape at specified time intervals, for storing tidal amplitudes for selected cells for plotting, and for storing final values of the basic variables on cards or tape at the end of program execution.

Subroutine CALTID. This subroutine computes at every time step the appropriate values of the four exciting tides that are specified around the periphery of the coarse grid model to impart tidal fluctuations in the system. Hourly values of tidal amplitudes read into the program from cards are interpolated appropriately to obtain tidal values at every time step.

Subroutine PRINTI. This subroutine prints the remaining basic input data not printed in the Executive Control Routine. Appropriate descriptive headings and titles are printed with the data so that it is possible to check that all prototype conditions are properly accounted for in the model. Print out of program control parameters serves as a check to see that the program has operated correctly. Proper specification of certain program control parameters can cause control to pass over this subroutine or execute only a portion of it.

Subroutine CALCQH. This subroutine is the basic computational element of the tidal hydrodynamics model. Control must pass through this subroutine during each time step of the computation process. In this subroutine, control moves from cell to cell according to a previously defined sequencing scheme so that only water cells are considered in the calculations. Based on the type of boundary condition required by a particular computational grid cell as specified by its identifying "flag" value, control is transferred to appropriate statements within this subroutine for calculation of certain constants and coefficients. Utilizing these constants and coefficients and known values of tidal amplitudes and flows from the previous time step, new values of these quantities are then determined explicitly at the end of the routine. One execution of this subroutine provides a complete new array of tidal amplitudes and flows per foot of width in the two coordinate directions. Water depths are computed from the new values of tidal amplitude at the end of this routine.

Subroutine PRINTO. This subroutine outputs the results of the basic model computations at specified time intervals. Specifically, values of tidal amplitudes and discharges are printed out for twenty pre-specified grid cells located in the grid system. Ordinarily, hourly values are printed out, however, any desired time interval greater than the computational time step can be used. In the event that the complete array of final computed values of tidal amplitudes and flows per foot of width for all grid elements are required to be saved at the end of model operation, control can be transferred to this subroutine where these values are either punched on cards or written on magnetic tape. These ending values of the basic variables are used as initial values for subsequent computer runs. Also at the end of model operation, hourly velocities for the above 20 cells are punched for the x- and y-directions.

Subroutine NETVQD. This is an optional subroutine that calculates net velocities, net flows, or average depths which occur during a tidal cycle for all computational grid elements. Net velocities and flows and average depths are printed for all grid cells and can also be punched on cards or stored on tape by this routine.

Subroutine STRVEL. This is also an optional subroutine, and it stores on magnetic tape the instantaneous hydrodynamics for all cells at specified time intervals. This routine is particularly useful for storing hydrodynamics at times of ebb, flood, and slack tides so that flow conditions throughout the system can be analyzed at these times. Another use of this routine has been to store instantaneous hydrodynamics for all cells at short time intervals and to use these data in a marker particle program to trace paths traversed by water particles during a tidal period.

Subroutine PLOTHS. This subroutine is an optional plot package which when executed, results in verification type plots of tidal amplitude for specified grid cells. Both the tidal amplitude computed by the hydrodynamic model and the tidal amplitude measured in the prototype are plotted for specific locations. Appropriate descriptive labels and titles are also included on the plots. As many as twenty different locations (grid cells) can be chosen for tidal amplitude plots. By obtaining these plots for several locations throughout the system being simulated, an idea of the accuracy of the model can be obtained.

Subroutine RITAP. This subroutine is used only in the operation of the coarse grid model and compiles arrays of selected flows and tides from the coarse grid model results. These selected flows and tides are then

interpolated temporally and distributed spatially to obtain the boundary input flows for the fine grid sub-model. The fine grid flows are then stored on magnetic tape for use in operating the fine grid sub-model. For the Masonboro Inlet problem, there are two versions of Subroutine RITAP which must be interchanged in the HYDTID program deck depending on the particular inlet geometry being simulated. Version I applies to the pre-project condition without the jetty, and Version II is used for the post-project condition with the jetty in place. Two different versions are needed because the configuration of boundary flow cells used to excite the fine grid sub-model are different for the two inlet conditions, and therefore different coarse grid flows must be interpolated and distributed accordingly.

DEFINITION OF PROGRAM VARIABLES

Program HYDTID

ANGCOR	-	Angle between north and x-axis measured clockwise from north.
CB	-	Submerged or overtopping barrier coefficient.
CELSID	-	Literal description equal to SIDE or TOP.
CODE	-	Literal, (CARD, TAPE, NONE, BOTH) which designates mode of I/O.
CON1	-	Base value counter for tidal curve interpolation.
CON2	-	Base value counter for tidal curve interpolation.
CT	-	Tidal discharge coefficient.
D	-	Total water depth in a given cell.
DATA	-	General purpose input variable used for temporary data storage.
DS	-	Cell side dimension.
DT	-	Computational time step.
DTODS	-	DT/DS .
DT02DS	-	$DT/(2 \cdot DS)$.
DT2	-	$DT/2$.
DUM	-	General purpose input variable used for temporary data storage.
E	-	Rate of evaporation.
ENDF	-	Literal which denotes end of input data file.
ENDT	-	Literal which denotes end of input title file.
F	-	Manning's "n" bottom roughness coefficient.
FX	-	Function of Manning's "n" for computations in the x-direction.

FY	-	Function of Manning's "n" for computations in the y-direction.
G	-	Acceleration of gravity.
GC	-	Internal computation constant.
GCDT04	-	Internal computation constant.
GDTODS	-	Internal computation constant.
GTIDE	-	Current value of exciting tide for one of four input tidal conditions.
G1	-	Exciting tidal elevation temporarily stored for printed output.
G41	-	Exciting tidal elevation temporarily stored for printed output.
G42	-	Exciting tidal elevation temporarily stored for printed output.
G43	-	Exciting tidal elevation temporarily stored for printed output.
H	-	Current tidal elevation in a given cell.
HF	-	Prototype tidal elevation used in verification plots.
HN	-	Newly computed tidal elevation in a given cell.
HPLT	-	Storage variable equal to tidal elevation to be plotted.
HPRT	-	Print out variable for tidal elevation.
HPRTA	-	Print out variable for tidal elevation.
HSIFT	-	Elevation difference between MSL and datum of input data.
I	-	Standard grid column indicator.
IBAR	-	Grid column indicator for submerged barrier cells.
IBASIC	-	Internal variable which indicates number of program options desired.
ICLL	-	Grid column indicator for water cells where computations are required.
IDCARD	-	Variable which indicates mode of basic cell data input.
IDTIDE	-	Identification number which assigns exciting tide to appropriate cells.

IDUM	-	General purpose input variable used for temporary data storage.
IFLAG	-	Computational cell flag number which denotes type of calculations to be performed.
IFLOW	-	Grid column indicator for external inflow cells.
IHKP	-	Grid column indicator for cells in coarse grid where ending H-values are to be punched for input into fine grid sub-model.
IK	-	Internal counter.
ILB	-	Internal counter.
ILF	-	Internal counter.
IMAX	-	Total number of columns in grid.
IMXJMX	-	Total number of cells in grid.
INETFL	-	Variable which specifies net flow option.
INEW	-	Internal variable used to facilitate I/O.
IODISP	-	Variable which specifies mode of dispersion coefficient output.
IONFLO	-	Variable which specifies mode of net flow output.
IONVEL	-	Variable which specifies mode of net velocity output.
IP	-	Grid column indicator for cells where tides and flows are to be periodically printed.
IPDATA	-	Variable which denotes extent of input data print out.
IQHIN	-	Variable which specifies mode of initial hydrodynamics input.
ISAVQH	-	Variable which specifies model of final hydrodynamics output.
ITIDE	-	Grid column indicator for tidal excitation cells.
IVLTAP	-	Variable which specifies mode of instantaneous hydrodynamics output.
J	-	Standard grid row indicator.
JBAR	-	Grid row indicator for submerged barrier cells.
JCLL	-	Grid row indicator for water cells where computations are required.

JFLAG	-	Two digit cell flag which specifies the particular finite difference formulation of the convective acceleration cross-product term that is to be used for a given cell.
JFLOW	-	Grid row indicator for external inflow cells.
JHKP	-	Grid row indicator for cells in coarse grid where ending H-values are to be punched for input into fine grid sub-model.
JK	-	Internal counter.
JLB	-	Internal counter.
JLF	-	Internal counter.
JMAX	-	Total number of rows in grid.
JP	-	Grid row indicator for cells where tides and flows are to be periodically printed.
JTIDE	-	Grid row indicator for tidal excitation cells.
K	-	Internal counter.
KB	-	Temporary counter for submerged barriers.
KD	-	Temporary counter for external inflows.
KEPSAV	-	Temporary variable used to indicate storage of hydrodynamics at end of one tidal cycle.
KG	-	Internal counter.
KINDAT	-	Tape unit number for reading basic cell data.
KINIQH	-	Tape unit number for reading initial hydrodynamics.
KK	-	Internal counter used in data input.
KQ	-	Internal counter used in printing basic hydrodynamics for selected cells.
KODISP	-	Tape unit number used for storing dispersion coefficients.
KONETF	-	Tape unit number used for storing net flows.
KONETV	-	Tape unit number used for storing net velocities.
KOTVEL	-	Tape unit number used for storing instantaneous hydrodynamics.

KOUNT	-	Internal counter used to designate specific water cells.
KOUTDA	-	Tape unit number for storing final hydrodynamics.
KPRINT	-	Variable which controls punching of hydrodynamics at end of one tidal cycle.
KQCTP	-	Tape unit number used for storing selected flows from coarse grid model for input to fine grid sub-model.
KQFTP	-	Tape unit number used for storing external inflows for exciting fine grid sub-model.
KRSOFN	-	Variable which indicates type of model operation to be performed.
KT	-	Internal counter.
LINMAX	-	Variable which indicates number of sets of hydrodynamic output to be punched per page.
M	-	Internal counter for plotting tides.
MA	-	Internal counter.
N	-	Internal counter.
NFLOW	-	Total number of external inflows.
NN	-	Internal counter.
NPLOT	-	Total number of cells where tidal plots are to be made.
NPRPLT	-	Variable which designates the order of 20 specified cells where basic hydrodynamics are to be periodically printed.
NREEF	-	Total number of submerged and overtopping barriers.
NTIDE	-	Total number of external tidal excitation cells.
OMEGA	-	Coriolis parameter.
PI	-	Constant equal to π (3.1416).
PTIME	-	Time interval for printing basic hydrodynamics at selected cells.
QINFLO	-	External inflow for a given cell.
QX	-	Current value of flow per foot of width in x-direction for a given cell.

QXN	-	Newly computed value of flow per foot of width in x-direction for a given cell.
QY	-	Current value of flow per foot of width in y-direction for a given cell.
QYN	-	Newly computed value of flow per foot of width in y-direction for a given cell.
R	-	Rainfall rate.
REMARK	-	Variable used for storing title inputs.
SIDE	-	Literal used to designate right side of computational cell.
SQTG	-	Square root of G.
STATON	-	Literal used to identify specific cells where basic hydrodynamics are periodically printed.
TCOUNT	-	Time counter used for printing basic hydrodynamics.
THETA	-	Wind angle.
THETA1	-	Wind angle temporarily stored for print out.
TIDE1	-	Tidal elevation read into program for Exciting Tide No. 1.
TIDE2	-	Tidal elevation read into program for Exciting Tide No. 2.
TIDE3	-	Tidal elevation read into program for Exciting Tide No. 3.
TIDE4	-	Tidal elevation read into program for Exciting Tide No. 4.
TID1	-	Current interpolated tidal elevation from Exciting Tide No. 1.
TID2	-	Current interpolated tidal elevation from Exciting Tide No. 2.
TID3	-	Current interpolated tidal elevation from Exciting Tide No. 3.
TID4	-	Current interpolated tidal elevation from Exciting Tide No. 4.
TIM	-	Time stored for plotting.
TIME	-	Current value of simulated time during model operation.
TIMEIN	-	Beginning time of model operation.
TIMTOT	-	Total time to be simulated.

TIMVEL	-	Specified time interval for storage of instantaneous hydrodynamics.
TMARK	-	Internal time counter for storage of instantaneous hydrodynamics.
TMAX	-	Final value of time at end of model operation.
TNET	-	Value of time at which computations for net flows and velocities begin.
TOP	-	Literal used to designate top side of computational cell.
TPER	-	Period of tidal cycle.
TPLOT	-	Value of time at which storage of hourly H-values begins for tidal plots.
UAPRT	-	Variable used for printing flows in x-direction at specified cells.
UAPRTA	-	Variable used for printing flows in y-direction at specified cells.
UPLT	-	Velocity in x-direction punched at PTIME intervals for selected cells where velocity comparisons are desired.
VAPRT	-	Variable used for printing flows in y-direction at specified cells.
VAPRTA	-	Variable used for printing flows in y-direction at specified cells.
VPLT	-	Velocity in y-direction punched at PTIME intervals for selected cells where velocity comparisons are desired.
W	-	Wind velocity.
W2	-	Temporary storage variable generally set equal to W.
XW	-	Effective wind stress term for x-direction.
YW	-	Effective wind stress term for y-direction.
Z	-	MSL elevation of bottom of cell.
ZB	-	MSL elevation of crest of submerged or overtopping barrier.

Subroutine CALTID

- DELT1 - Current incremental change during one time step for Exciting Tide No. 1.
- DELT2 - Current incremental change during one time step for Exciting Tide No. 2.
- DELT3 - Current incremental change during one time step for Exciting Tide No. 3.
- DELT4 - Current incremental change during one time step for Exciting Tide No. 4.
- NTID - Counter used in interpolation.
- NTIDP1 - Counter used in interpolation.

Subroutine CALCQH

- COEFX - Computed coefficient used in basic hydrodynamic computations of flow in x-direction.
- COEFY - Computed coefficient used in basic hydrodynamic computations of flow in y-direction.
- DBARX - Internally computed variable involving depths in adjacent cells in x-direction.
- DBARY - Internally computed variable involving depths in adjacent cells in y-direction.
- DBX - Average water depth over submerged barrier on side of cell.
- DBY - Average water depth over submerged barrier on top of cell.
- DCON - Reciprocal of average of depths in adjacent cells.
- HMAX - The greater of two adjacent MSL water surface elevations.
- IFL - Temporary variable equal to IFLAG.
- IFLG - Temporary variable equal to IFLAG.
- JAFL - First digit of JFLAG value.

JBFL	-	Second digit of JFLAG value.
JFL	-	Temporary variable used to indicate type of flow calculations required at a particular cell.
KBT	-	Temporary counter for submerged and overtopping barriers.
KTT	-	Temporary counter for tidal excitation cells.
QBARX	-	Magnitude of actual velocity vector used in calculation of flows in x-direction.
QBARY	-	Magnitude of actual velocity vector used in calculation of flows in y-direction.
QDIFXS	-	Flow gradient in y-direction used to approximate $\partial q_x / \partial y$.
QDIFYS	-	Flow gradient in x-direction used to approximate $\partial q_y / \partial x$.
QXBAR	-	Average flow in x-direction defined at same location as q_y .
QYBAR	-	Average flow in y-direction defined at same location as q_x .
SIGN	-	Temporary algebraic sign variable which indicates flow direction across overtopping barriers.
ZMAX	-	The greater of two adjacent cell MSL bottom elevations.

Subroutine NETVQD

DEPTH	-	Average water depth in a given cell over a tidal cycle.
DXA	-	Average of water depths in two adjacent cells in x-direction.
DYA	-	Average of water depths in two adjacent cells in y-direction.
QNETX	-	Net flow for a given cell in the x-direction over a tidal cycle.
QNETY	-	Net flow for a given cell in the y-direction over a tidal cycle.
UAVE	-	Mean tidal velocity in x-direction for a given cell during one tidal cycle.
VAVE	-	Mean tidal velocity in y-direction for a given cell during one tidal cycle.

- DX - Dispersion coefficient in x-direction computed using Random Process Analogy.
- DY - Dispersion coefficient in y-direction computed using Random Process Analogy.
- VNETX - Net velocity in the x-direction for a given cell during one tidal cycle.
- VNETY - Net velocity in the y-direction for a given cell during one tidal cycle.

Subroutine STRVEL

- TAPTIM - Current value of time written on tape for checking purposes.

Subroutine PLOTHS

- A - A processor variable for plotting.
- ACOLMN - Storage vehicle for a plot character.
- ADOT - Print character "X".
- AEQUAL - Print character "=".
- AI - Print character "I".
- AMINUS - Print character "-".
- APLUS - Print character "+".
- ASTRSK - Print character "*".
- BLANK - Print character "^".
- CO - Print character "O".
- DIFHF - Internal processor variable.
- DIFHP - Internal processor variable.
- HF - Prototype tidal elevation.

ICC	-	Internal processor variable.
IHF	-	Temporary integer storage for prototype tidal elevation.
IHPLT	-	Temporary integer storage for model tidal elevation.
ITCONT	-	Internal processor variable.
ITID	-	Internal processor variable.
ITIDM1	-	Internal processor variable.
ITIDPR	-	Internal processor variable.
MM1	-	Internal processor variable.
TIDPRT	-	Internal processor variable.
TITEL	-	Specified literal title of plot.
TITELY	-	Literal ordinate label.

Subroutine RITAP

DTOT	-	Sum of k water depths-used as a proportioning base to distribute one coarse grid flow to k fine grid cells.
HOLD	-	Value of water elevation for beginning of coarse grid time step.
HTP	-	Value of water surface elevation at end of coarse grid time step.
HTPU	-	Water surface elevation at intermediate time level used to determine fine grid input flows.
KCT	-	Internal interpolating counter.
KCTM	-	Interpolation factor equal to (coarse grid time step/fine grid time step).
Q	-	Interpolated and distributed value of external inflow for fine grid sub-model.
QOLD	-	Coarse grid flow at beginning of coarse grid time step.
QS	-	Computed fine grid external inflow in x-direction.
QT	-	Computed fine grid external inflow in y-direction.

QTP	-	Coarse grid flow at end of coarse grid time step.
QTPU	-	Coarse grid flow at intermediate time level.
TIME	-	Internal time counter (seconds).
TMAX	-	Total real time of model operation (seconds).
ZT	-	Input variable of cell bottom elevations.

DATA INPUT

The data input structure for HYDTID is dependent on the mode of model operation and the various program options the user wishes to employ. For purposes of this study, three different types of operation modes are defined as follows: (1) Coarse Grid Production Run meaning operation of the coarse grid model for the purpose of generating the input flows to the fine grid sub-model; (2) Fine Grid Production Run meaning any operation of the fine grid sub-model; and (3) Coarse Grid Non-Production Run meaning operation of the coarse grid model for purposes other than to generate fine grid sub-model inputs. Input data is read from both cards and magnetic tape, with some data specified in the program itself. In all there are eleven different card data files which can be read, however only six of these are necessary for coarse grid model operation, and five are required by the fine grid sub-model. The contents of the eleven files are described in the subsequent paragraphs followed by their appropriate format structures.

Title File - Titles for First Page of Output

Four separate 68 character titles can be specified using this file. They appear on the first page of the edited output and can be used to describe the various conditions under which the model is being operated. The entire Title File is also echo printed at the beginning of each run.

Data File A - Program Control Parameters

The I/O mode for various types of data in the model are specified in this file by assigning the appropriate literal, CARD, TAPE, BOTH, or NONE, in the proper space on the File A cards. If TAPE or BOTH are assigned, the tape unit number must also be specified. Based on this information, HYDTID performs the necessary I/O operations.

Data File B - Basic Model Operation Parameters

Included in the file are the basic parameters which are used in the model. All of the parameters are read as floating point variables from columns 74 through 80 and then assigned to appropriate variable names in the program. The various parameters required are described on the format forms which follow and the required units are also specified.

Data File C - Basic Cell Data

One data card for grid cell included in a model is read by the program from this file. Each card is identified with I and J coordinates and includes all of the descriptive data necessary for hydrodynamics to be determined for every cell in the computational grid. These data include the following:

1. IFLAG - Computational cell flag determined from the individual boundary conditions at the cell .
2. Z - Average bottom or ground elevation (feet) referred to same datum specified in Data File B, Card 20.
3. F - Manning's "n" value.

4. IDTIDE - Tidal identification number ($1 \leq \text{IDTIDE} \leq 4$) which assigns appropriate exciting tide to the cell if it is flagged accordingly. Otherwise IDTIDE is zero.
5. QINFLO - External inflow magnitude (cfs) if cell is flagged accordingly. Otherwise QINFLO set equal to zero. Sign must be specified to be consistent with coordinate axes. For fine grid sub-model, this quantity does not need to be specified since external flows are read from tape for each of the exciting flow cells.
6. CBX - Discharge coefficient assigned to barriers parallel to x-axis when cell flagged accordingly. Otherwise CBX set equal to zero.
7. ZBX - Crest elevation assigned to barriers parallel to x-axis when cell flagged accordingly. Otherwise ZBX set equal to zero. Referred to same datum specified in Data File B, Card 20.
8. CBY - Discharge coefficient assigned to barriers parallel to y-axis when cell flagged accordingly. Otherwise CBY set equal to zero.
9. ZBY - Crest elevation assigned to barriers parallel to y-axis when cell flagged accordingly. Otherwise ZBY set equal to zero. Referred to same datum specified in Data File B, Card 20.
10. NPRPLT - Print/Plot order number assigned to 20 selected cells for periodic output of basic hydrodynamics and for plotting tidal elevations. Otherwise NPRPLT set equal to zero.
11. STATON - Literal station name used as heading when printing basic hydrodynamics for 20 selected cells. Otherwise STATON left blank.

Data File D - Exciting Tides

As the coarse and fine grid models are currently structured, this data file is only required by the coarse grid model. For each of the four exciting tides used in the model, 26 hourly values of tides (2 tidal cycles) are read preceded by an appropriate title card. Datum for the tides is the same specified in Data File B, Card 20.

Data File E - Cell Identification for Storing H-Values

This is an optional data file used only for production runs with the coarse grid model. I and J coordinates are read for those cells in the coarse grid model where tidal elevations at the end of one tidal cycle are required to establish the initial water levels in the fine grid sub-model. As currently structured the program reads 32 sets of coordinates.

Data File F - Two-Digit Convective Acceleration Cell Flags

This data file is required for all modes of model operation. For those cells that require finite difference approximations of the flow gradients in the cross-product terms that are different from the normal centered difference formulations, I and J coordinates and an appropriate two-digit flag are read from a single card. When a blank card is encountered, the program assumes that the end of this file has been reached and control is transferred accordingly.

Data File G - Complete Array of Initial Hydrodynamics

Once the models have been operated for a complete tidal cycle, the ending values of the hydrodynamics for every cell can be saved and used as the initial conditions at which to begin subsequent simulations with the models. In this manner, simulations can be made with several short one tidal cycle runs rather than a single long run which might take several hours of computer time. These ending hydrodynamics can be obtained on cards or magnetic tape by specifying the appropriate option in Data File A for the

initial run, and can then be read into the models for subsequent runs as Data File G again using the option in Data File A. In the event no initial conditions are available, initial hydrodynamics are set equal to zero.

Data File H - Initial H-Values

This data file is used only with the fine grid sub-model when initial hydrodynamics for all cells are not available from previous runs. For this situation, all flows are set equal to zero, but initial water levels are established from those computed using the coarse grid model. Data File H is punched when the coarse grid model is operated under Mode 1, Production Run.

Data File I - Selected Bottom Elevations for Fine Grid Sub-Model Inflow Cells

This data file is required only for the operation of the coarse grid model under Mode 1, Production Run. Data File I consists of the bottom elevations at those fine grid cells where exciting inflows are specified. These data are used in spatially distributing the computed flows from the coarse grid model to obtain the fine grid inputs. The datum for these elevations is the same as that specified in Data File B, Card 20.

Data File J - Prototype HF-Values for Tidal Plots

When tidal verification plots are desired using either model, the measured prototype tidal elevations must be read into the program as Data File J. The datum for these elevations is the same as that specified in Data File B, Card 20.

DATA INPUT FORMATS

Program HYDTID

Title File - Titles for First Page of Output (5 cards)

TITLE	01	[17A4]
TITLE	02	
TITLE	03	
TITLE	04	
ENDTITLE		

Data File A - Program Control Parameters (10 cards)

		Card Tape Both	59	None	Card Tape Both	Unit No.	76
FILE A	01	READ BASIC CELL DATA FROM			A4		12
FILE A	02	READ INITIAL HYDRODYNAMICS FROM					
FILE A	03	COMPUTE AND SAVE NET VELOCITIES ON					
FILE A	04	COMPUTE AND SAVE NET FLOWS ON					
FILE A	05	COMPUTE AND SAVE DISPERSION COEF. ON					
FILE A	06	STORE ENDING VALUES OF HYDRODYNAMICS ON					
FILE A	07	STORE INSTANTANEOUS HYDRODYNAMICS ON					
FILE A	08	WRITE/READ INPUTS FOR FINE GRID MODEL ON					
FILE A	09	STORE COARSE GRID DATA FOR FINE GRID ON					
ENDFILE A							

* Small numbers above each file refer to corresponding columns on an 80 column computer card.

Data File D (Coarse Grid Model Only) - Exciting Tides (13 cards)

INPUT TIDE NO. 1 - GAGE 0, MASONBORO INLET
[26 hourly values (2 semi-diurnal cycles) of MLW tides punched sequentially, 16F5.2]
INPUT TIDE NO. 2
INPUT TIDE NO. 3
INPUT TIDE NO. 4
ENDFILE D

Data File E (Optional, Coarse Grid Model Only) - Cell Identifications for Storing Ending H-Values

[I and J coordinates punched sequentially, 40I2]
[Repeat as Necessary]

Data File F - Two-Digit Convective Acceleration Cell Flags

		JFLAG	
1	5	9	
I4	I4	I4	[1 card for each computational cell where JFLAG ≠ 11]
			[Last card should be blank]

Data File G (Optional) - Complete Array of Initial Hydrodynamics

[H values punched sequentially for each row in grid, 8F10.5]
[Repeat as necessary]
[Sets of QX and QY values punched sequentially for each row in grid, 8F10.4]
[Repeat as necessary]
ENDFILE G

Data File H (Optional Fine Grid Sub-Model Only) - Initial H-Values

1	4	5	9	H
14	14			F10.3
[One card for each water cell in fine grid sub-model. Input only for first tidal cycle run.]				
[Last card should be blank]				

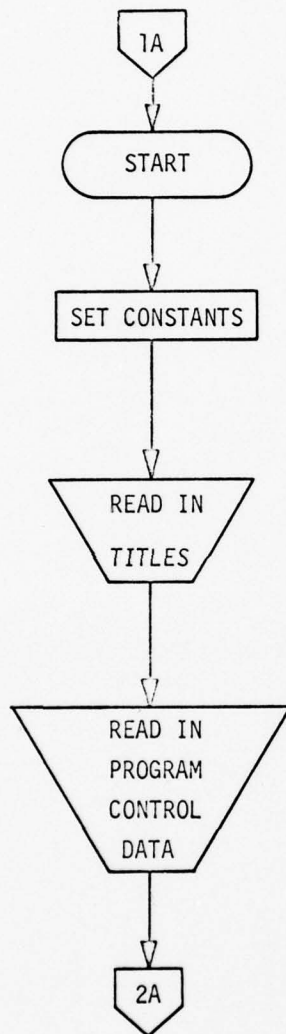
Data File I (Optional Coarse Grid Model Only) - Selected Bottom Elevations for Fine Grid Sub-Model Cells

26	F4.0
[One card for each boundary inflow cell in fine grid sub-model]	

Data File J (Optional) - Prototype HF-Values for Tidal Plots

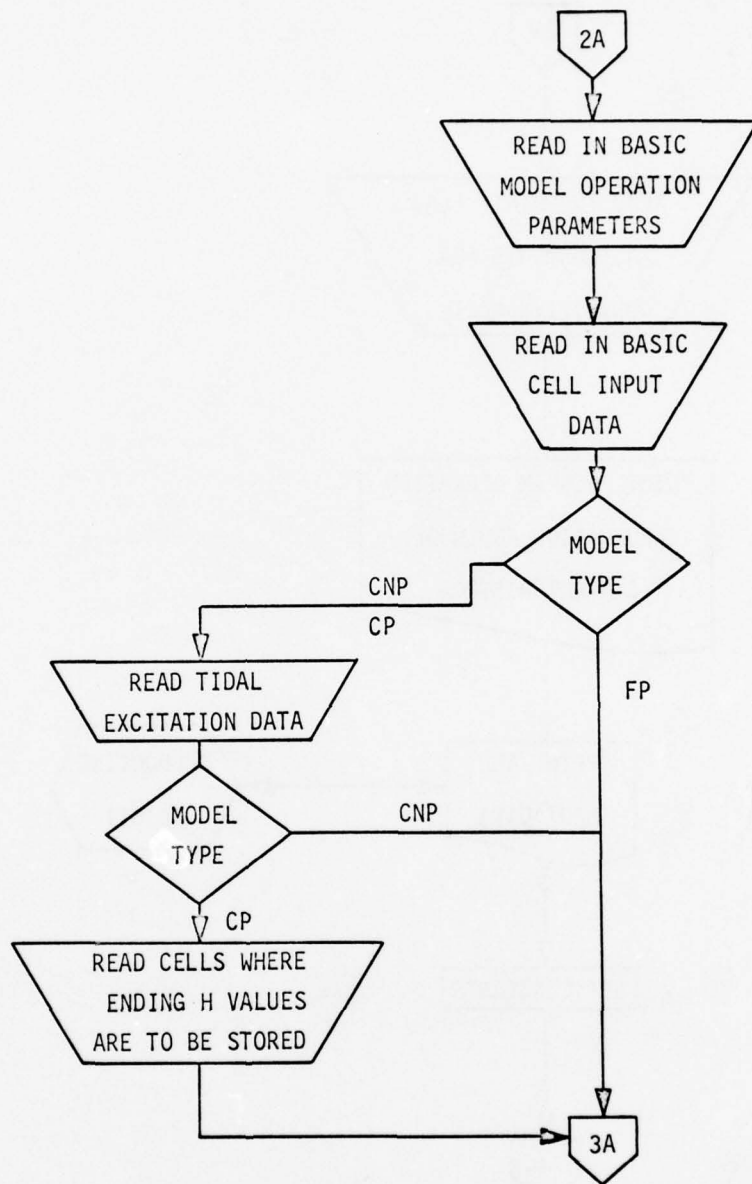
[Title card identifying gage number and period of recorded tide]
[26 hourly values (2 semi-diurnal cycles) of MLW tides punched sequentially, 16F5.2]
[Repeat title card and tide data cards for each plot to be made]

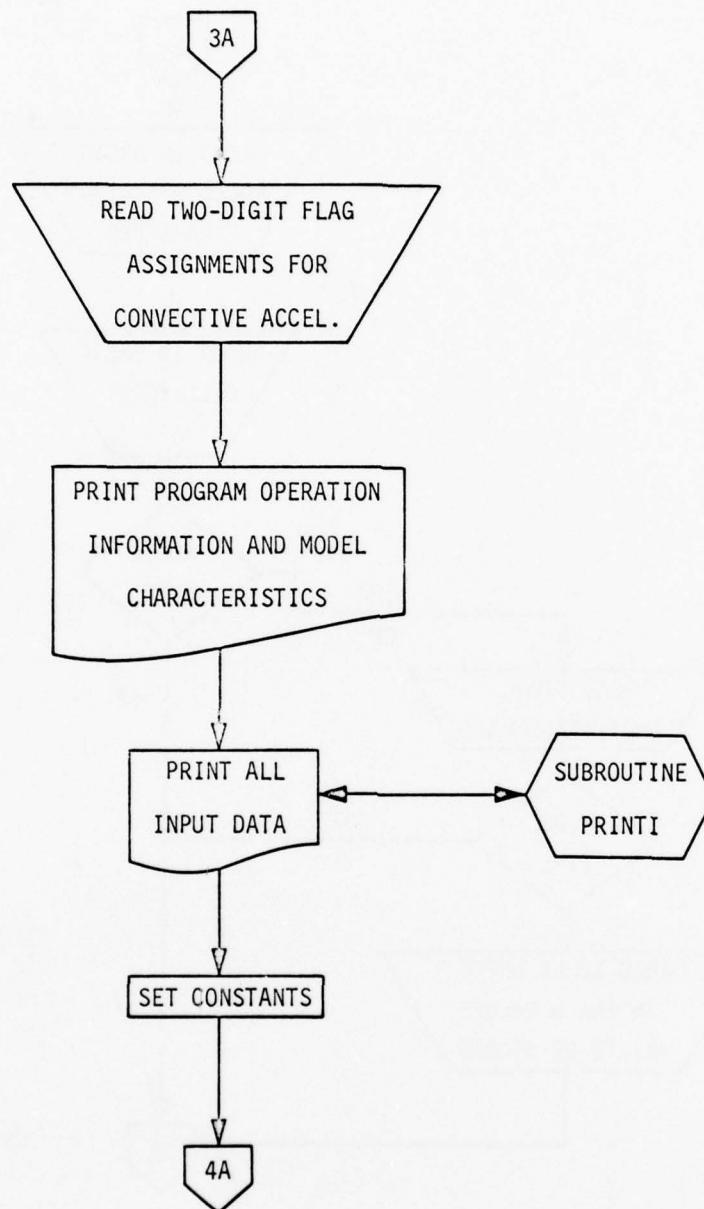
FLOW CHART FOR MAIN HYDTID PROGRAM

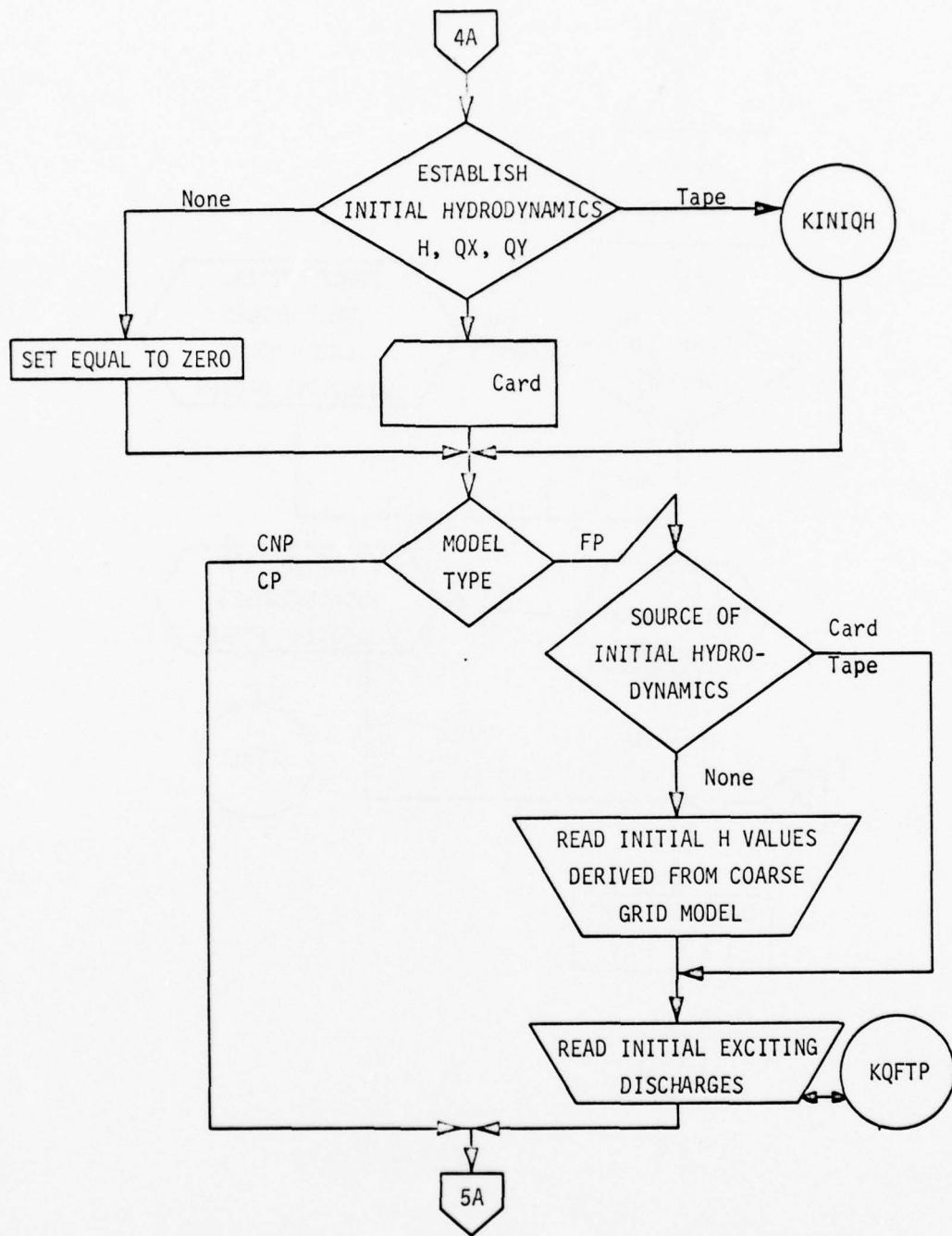


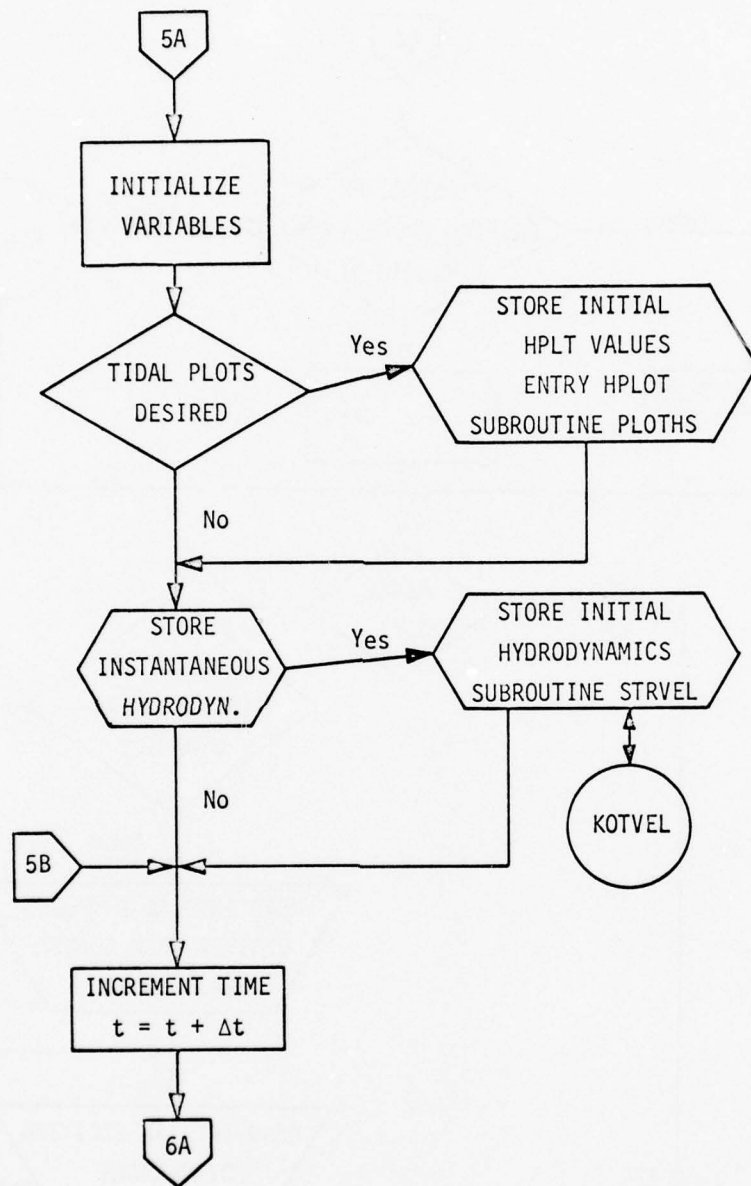
Legend for Model Type

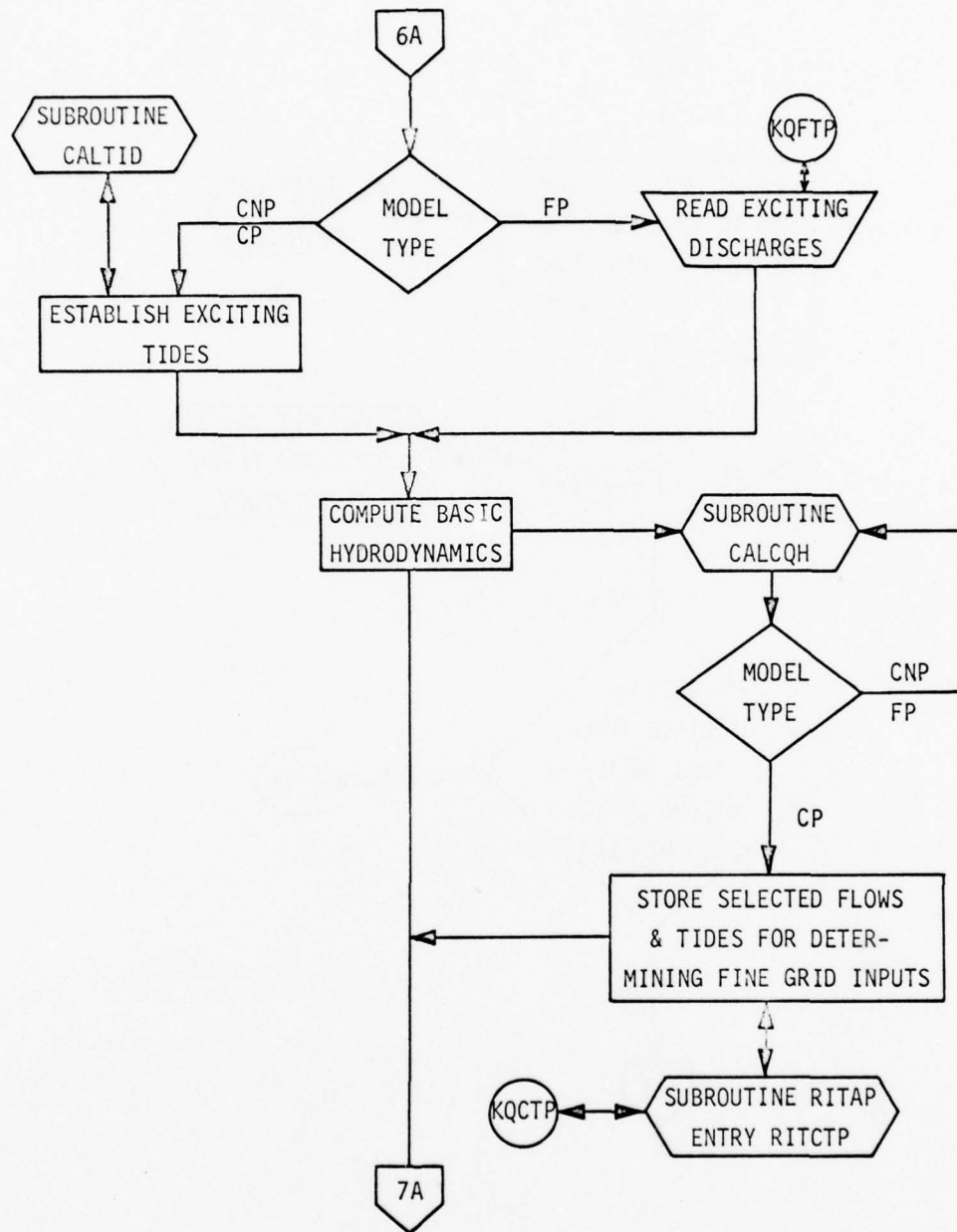
- CNP - Coarse Grid Model,
Non-Production Run
- CP - Coarse Grid Model,
Production Run
- FP - Fine Grid Model
Production Run

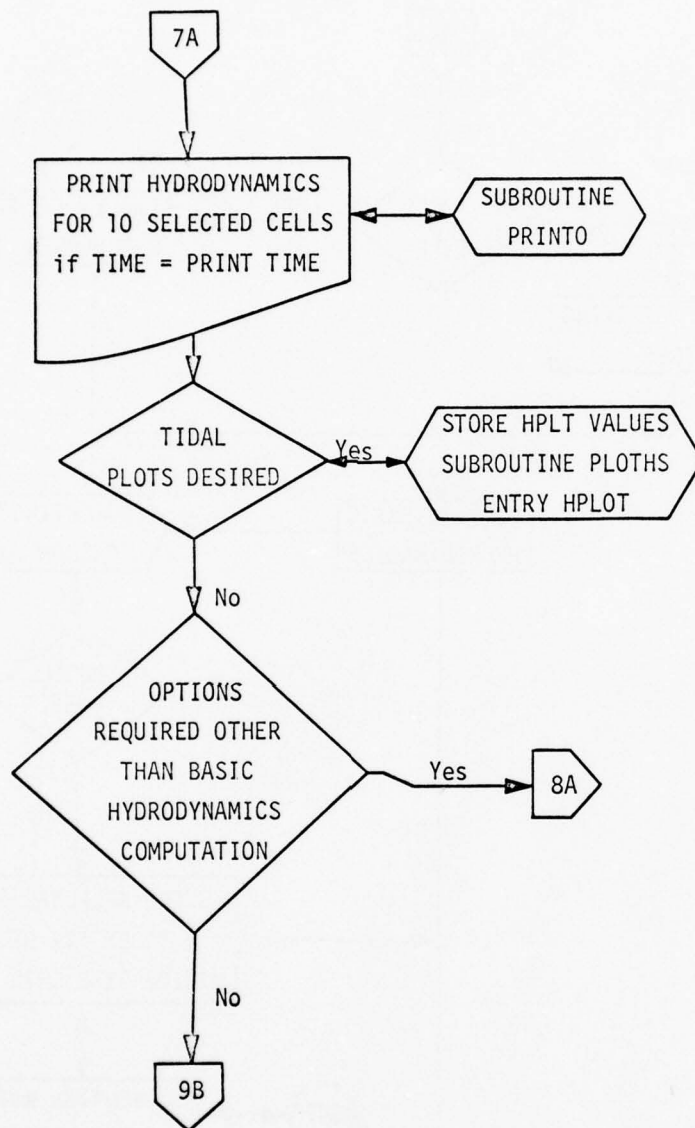


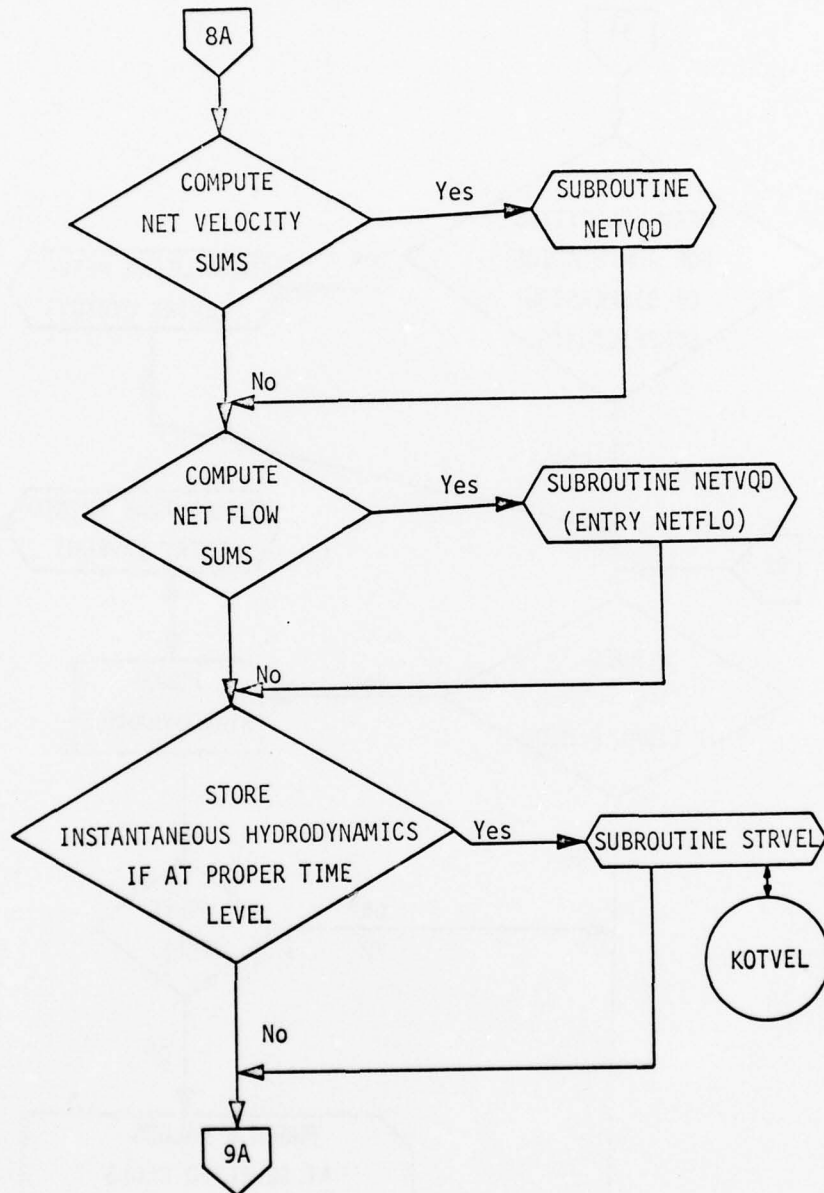


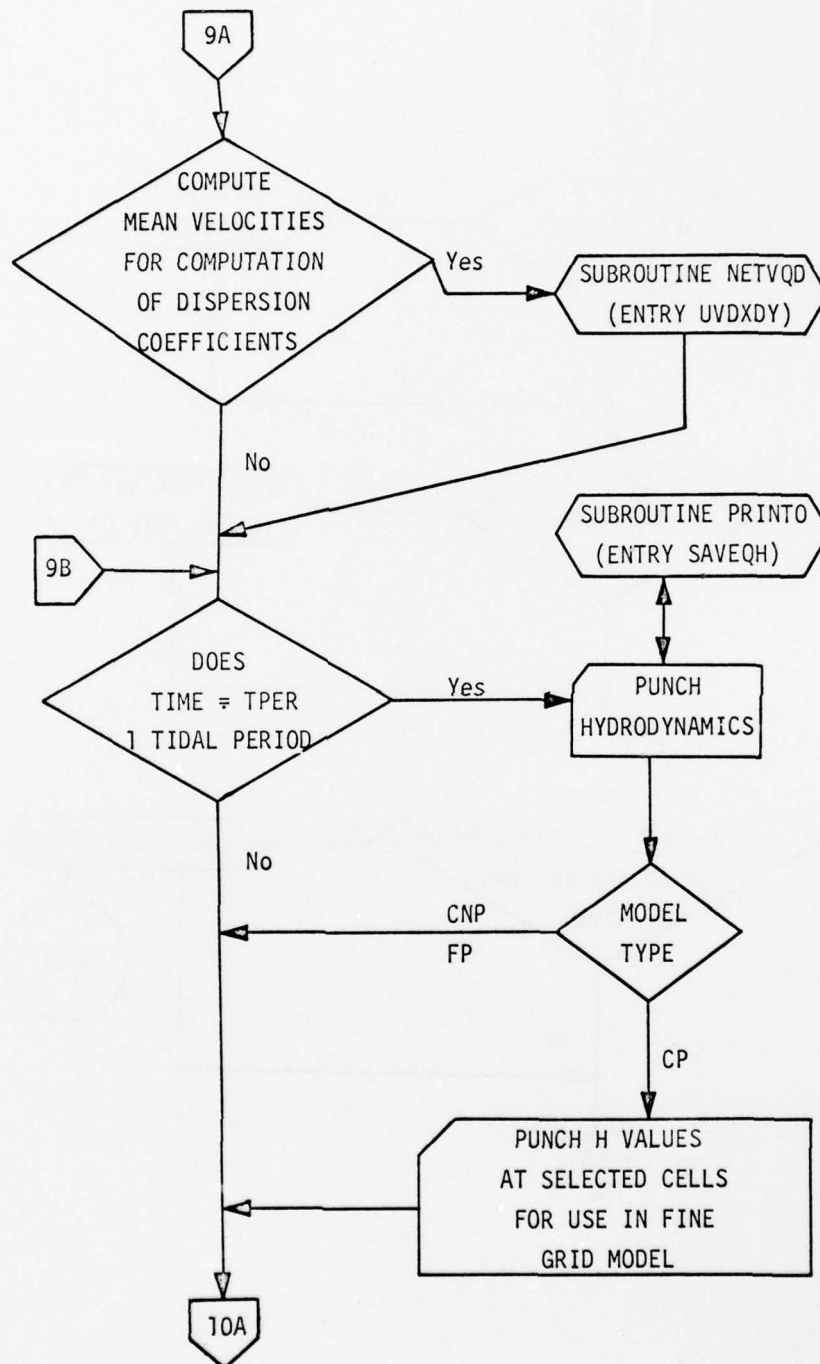


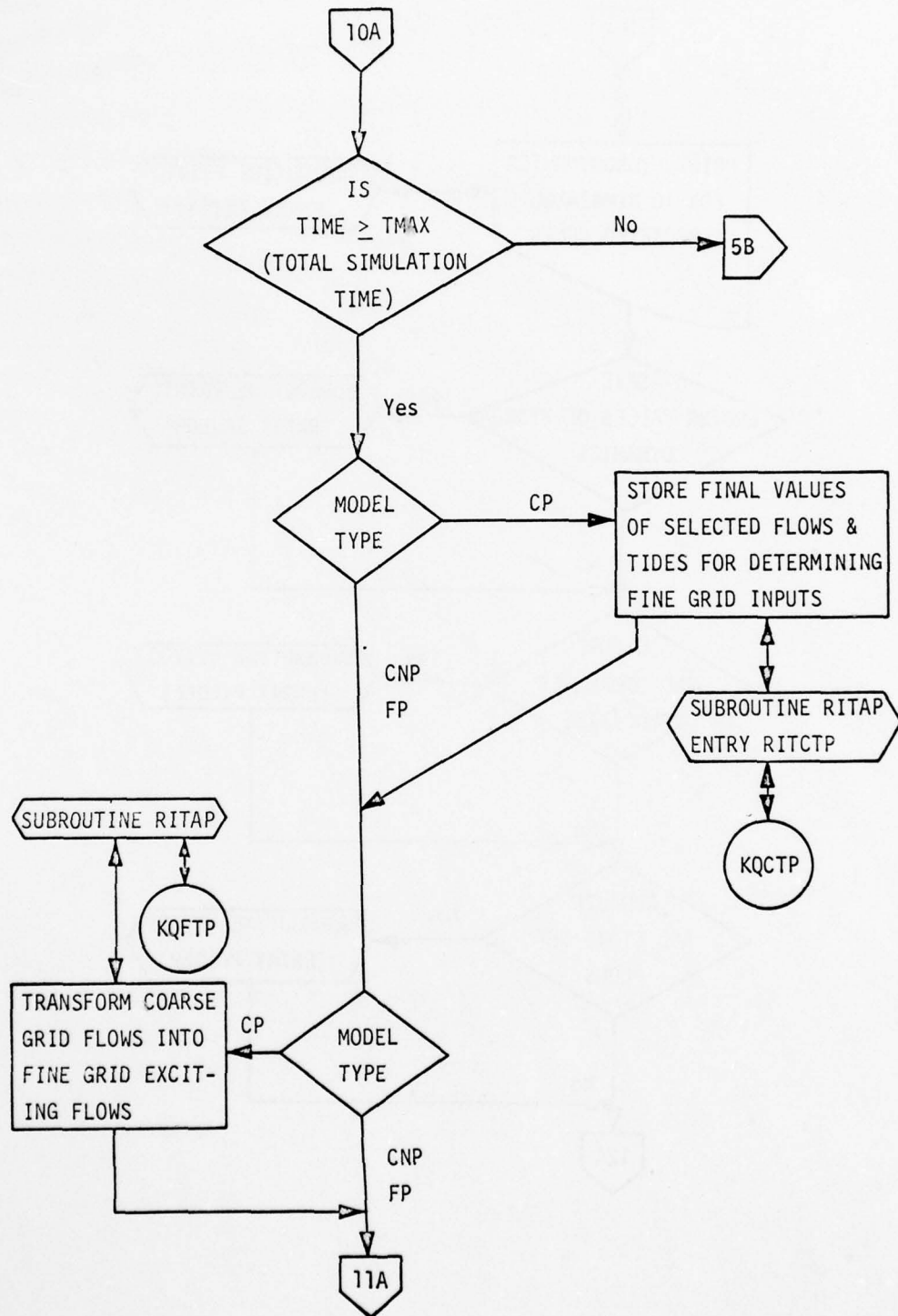


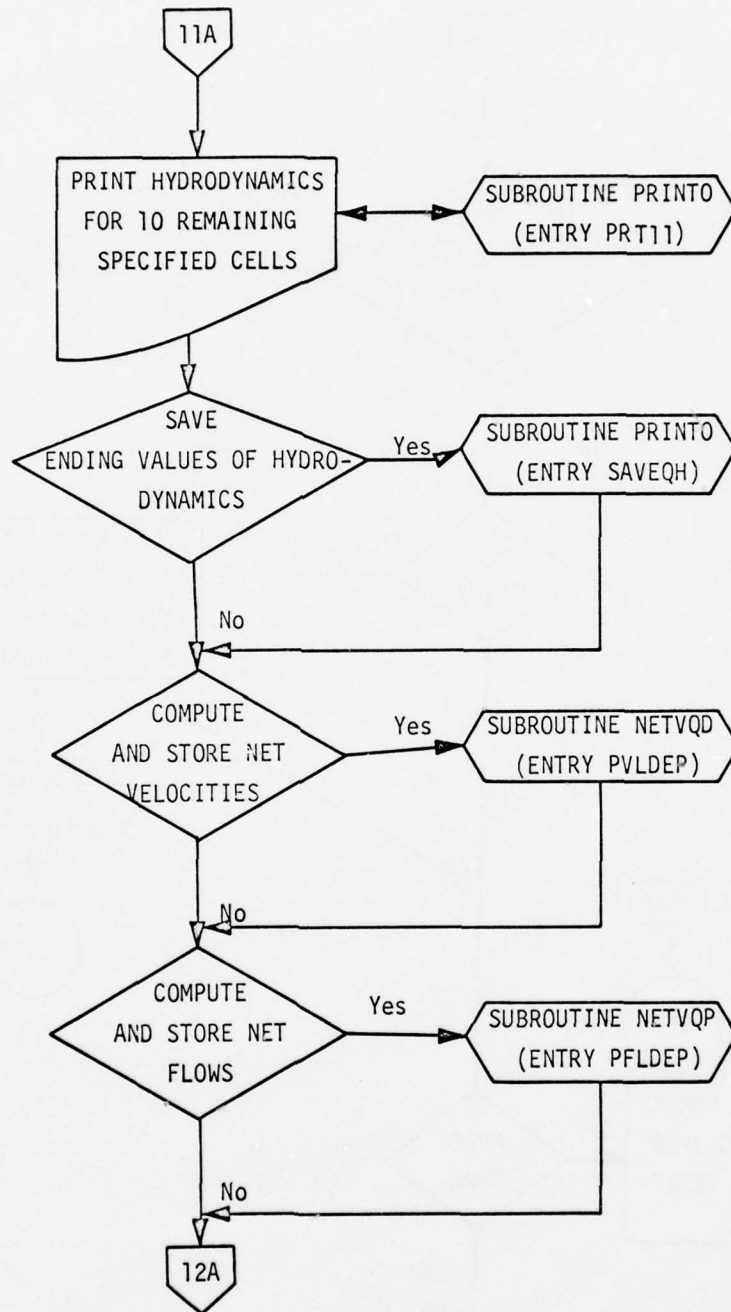


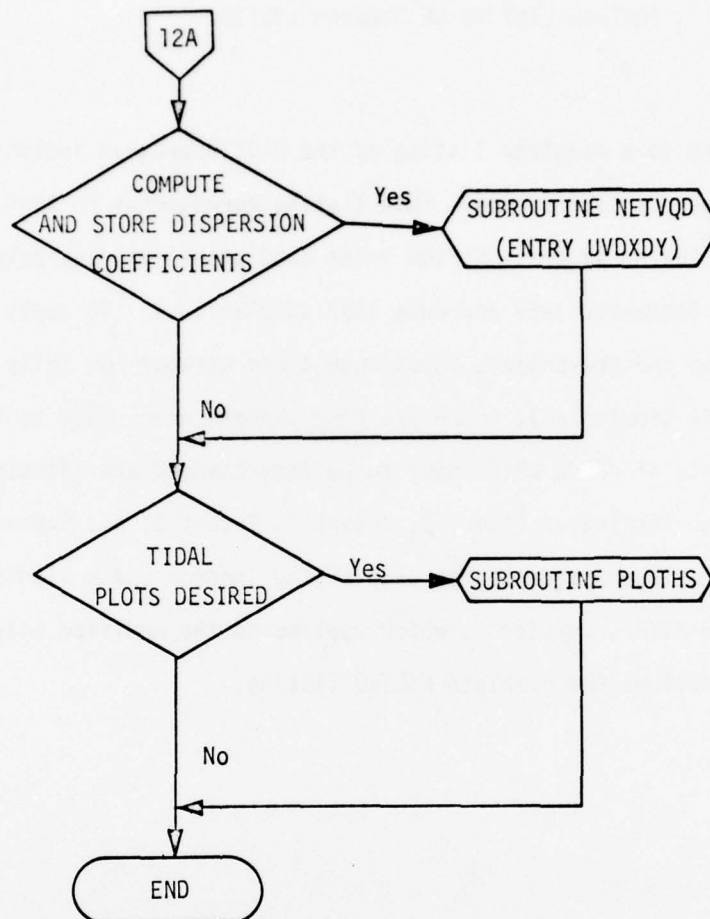












FORTTRAN LISTING OF PROGRAM HYDTID

Following is a complete listing of the HYDTID program including all of its various subroutines. This listing corresponds to that used for simulation of the modified inlet conditions with the jetty in place (12 September 1969 and June 1967 simulations). To apply the program to the pre-project inlet conditions without the jetty (November 1964 simulation), there are four changes which have to be made. The sets of cards which have to be interchanged are identified in the program listing as Insert 1, Insert 2, Insert 3, and Subroutine RITAP. The replacement cards for each of the inserts and a listing of Subroutine RITAP, Version I, which applies to the modified inlet conditions, follows the complete HYDTID listing.

05 FEB 73 12:06:27.041

QI FOR.* HYDTID,HYDTID
UNIVAC 1108 FORTRAN V LEVEL 2206 0023
THIS COMPILATION WAS DONE ON 05 FEB 73 AT 12:06:27

MAIN PROGRAM

STORAGE USED (BLOCK, NAME, LENGTH)

0001	*CODE	004252
0000	*DATA	001551
0002	*BLANK	032477
0003	MG	010544
0004	ALL	007133
0005	MRQ	000003
0006	MPRC	000002
0007	MQPI	002311
0010	PUN	004622

EXTERNAL REFERENCES (BLOCK, NAME)

0011	PRINTI	0012	ZEROS	0013	PRINTT	0014	HPL0T	0015	STRVEL
0016	CALTI0	0017	CALCQH	0020	PRINTO	0021	NETVQD	0022	NETFLO
0023	UVDXY	0024	SAVEQH	0025	RIICTP	0026	RIITAP	0027	PRT11
0030	PVLDEP	0031	PFLDEP	0032	UVDOUT	0033	PLOTHS	0034	SQRT
0035	NRDU\$	0036	NI01\$	0037	NI02\$	0040	NWDU\$	0041	NERR2\$
0042	NREW\$	0043	NRDC\$	0044	NPRT\$	0045	COS	0046	SIN
0047	NRBUS	0050	NWDC\$	0051	NSTOP\$				

STORAGE ASSIGNMENT FOR VARIABLES (BLOCK, TYPE, RELATIVE LOCATION, NAME)

0001	001714	10476	0001	001725	1055G	0001	001735	1063G	0001	001746	1071G
0001	001756	1077G	0001	001322	110L	0001	001767	1105G	0001	001777	1113G
0001	002010	1121G	0001	002024	1131G	0001	002040	1141G	0001	002052	1151G
0001	002111	1171G	0001	002131	1200G	0001	002132	1203G	0001	002167	1226G
0001	002174	1232G	0000	001473	142F	0001	000023	143G	0001	004065	143L
0000	001475	144F	0001	000030	147G	0001	003002	1547G	0001	003006	1553G
0001	003020	1563G	0001	003024	1567G	0001	003045	1603G	0001	003061	1613G
0001	000050	162G	0001	003113	1625G	0001	003114	1627G	0001	003131	1636G

0001	003132	1640G	0001	003161	1652G	0001	003162	1655G	0001	003264	1710G
0001	003272	1715G	0001	003301	1722G	0001	003307	1727G	0001	003315	1734G
0001	003323	1741G	0001	003330	1746G	0001	003336	1753G	0001	000072	1766
0001	003405	1775G	0000	000624	199F	0001	003406	2000G	0001	002223	201L
0000	000633	202F	0001	000105	203G	0001	002230	203L	0000	000643	204F
0001	002251	205L	0001	003551	2052G	0000	000621	2055F	0000	000655	206F
0001	003564	2061G	0001	002243	207L	0001	002255	208L	0000	000665	209F
0001	003674	2095L	0001	004071	2096L	0001	004113	2097L	0000	000677	210F
0001	000113	210G	0001	002277	213L	0000	000710	214F	0001	003750	2144G
0001	003760	2147G	0001	002273	215L	0001	002513	216L	0001	004033	2161G
0001	004036	2164G	0000	000726	217F	0001	002306	218L	0000	000765	2180F
0000	000746	219F	0001	000137	223G	0001	002555	226L	0001	002535	227L
0001	002543	228L	0000	001234	229F	0001	002561	230L	0000	001247	231F
0000	001264	232F	0001	000152	232G	0001	002405	233L	0001	002412	234L
0001	002416	235L	0001	000162	236G	0001	002423	236L	0000	001053	237F
0000	001063	238F	0000	001077	239F	0001	002345	240L	0001	002352	241L
0001	002356	242L	0001	002363	243L	0000	001016	244F	0000	001025	245F
0000	001037	246F	0001	000204	246G	0001	002513	247L	0000	001212	248F
0001	002445	249L	0001	002452	250L	0001	002456	251L	0001	000211	252G
0001	002463	252L	0000	001115	253F	0000	001136	254F	0000	001156	255F
0000	001276	257F	0000	001314	258F	0000	001344	259F	0000	001355	260F
0001	000231	265G	0001	002500	271L	0001	002505	272L	0000	001200	273F
0000	001003	274F	0001	002323	275L	0001	000253	277G	0001	001007	3001L
0001	001012	3002L	0001	001021	3003L	0001	001030	3004L	0001	001033	3005L
0001	001040	3006L	0001	001043	3007L	0001	001052	3008L	0001	000732	3011L
0001	000741	3012L	0001	000750	3013L	0001	000757	3014L	0001	000762	3015L
0001	000765	3016L	0001	000770	3017L	0001	000773	3018L	0001	000776	3019L
0001	001001	3020L	0001	001063	3021L	0001	001004	3022L	0000	000475	3025F
0000	000562	3026F	0000	000503	3027F	0000	000307	3032F	0000	000317	3033F
0000	000376	3035F	0000	000313	3043F	0000	000316	3044F	0000	000402	3045F
0000	000467	3046F	0001	000274	305G	0000	000410	3057F	0001	000422	3061L
0001	000433	3062L	0001	000444	3063L	0001	000455	3064L	0001	000466	3065L
0001	000477	3066L	0001	000510	3067L	0001	000536	3068L	0000	000614	3076F
0000	000570	3077F	0001	004246	310L	0001	000302	312G	0001	002266	316L
0001	000330	326G	0001	002530	329L	0001	000342	335G	0001	002400	337L
0001	000373	343G	0001	002340	347L	0000	000616	350F	0001	002440	352L
0001	001132	3666L	0001	003072	37L	0001	001117	3777L	0001	002767	38L
0001	003147	39L	0001	000542	405G	0001	000547	411G	0001	000567	424G
0001	000611	436G	0000	001467	443F	0001	000624	443G	0000	001465	444F
0001	003613	45L	0001	000632	450G	0001	003560	453L	0001	000656	463G
0001	000670	472G	0001	003373	5000L	0001	001241	5150L	0000	000577	516F
0001	001216	5160L	0001	001540	518L	0001	001561	519L	0001	001616	520L
0001	001653	521L	0001	001375	522L	0001	001264	5515L	0001	003457	599L

0001	003421	60L	0001	003473	600L	0001	001163	6046	0001	001203	6126
0001	003626	661L	0001	003643	662L	0001	003652	667L	0000	001471	700F
0001	003230	701L	0000	000620	708F	0001	002161	709L	0001	002141	710L
0001	001404	7146	0001	001405	717G	0001	003254	720L	0001	001061	730L
0001	000362	732L	0001	001441	733G	0001	000521	733L	0001	000530	734L
0001	001710	738L	0001	002604	740L	0001	002612	741L	0001	002617	742L
0001	001455	743G	0001	003211	744L	0001	003214	745L	0001	003556	746L
0001	003737	747L	0001	004111	748L	0001	004133	750L	0001	004135	751L
0001	001467	752G	0001	001670	760L	0001	001673	761L	0001	001677	762L
0000	001330	763F	0000	001336	764F	0001	003542	770L	0001	003200	771L
0001	004140	772L	0001	004160	773L	0001	003217	774L	0001	003663	777L
0001	001166	780L	0000	000622	87F	0001	003674	888L	0001	002116	901L
0001	003523	99L	0001	004246	9999L	0000	R 000242	ANGCOR	0002	032436	AO
0002	R 021443	CB	0002	R 021777	CELSID	0000	R 000000	CODE	0002	R 032434	CON1
0002	R 032435	CON2	0002	R 021063	CT	0002	032442	C1	0002	032446	C2
0002	032452	C3	0002	R 000000	D	0000	R 000240	DATA	0002	R 032361	DS
0002	R 032365	DT	0002	R 032404	DTODS	0002	R 032432	DT02DS	0002	R 032366	DT2
0000	R 000274	DUM	0000	R 000270	DUMDAT	0000	R 000267	DUMMY	0000	R 000252	DUMMY1
0000	R 000253	DUMMY2	0000	R 000255	DUMMY4	0000	R 000266	DUMMY5	0000	R 000257	DUMMY6
0000	R 000260	DUMMY7	0000	R 000261	DUMMY8	0000	R 000263	DUMMY9	0000	R 000264	DUMMY10
0000	R 000227	DUM1	0000	R 000230	DUM2	0002	R 032427	E	0000	R 000220	ENDF
0000	R 000221	ENDT	0002	R 013755	F	0003	R 000000	FX	0003	R 002311	FY
0002	R 032362	G	0000	R 000223	GC	0002	R 032363	GCDT04	0002	R 032364	GD10DS
0002	021347	GTIDE	0002	031103	G1	0002	031223	G41	0002	031343	G42
0002	031463	G43	0004	R 004622	H	0002	023677	HF	0000	R 000306	HKP
0002	R 004622	HN	0002	022667	HPLT	0002	022655	HPRT	0002	023763	HPRTA
0006	R 000000	HSHIFT	0000	I 000225	I	0002	I 022155	IBAR	0000	I 000246	IBASIC
0003	I 004624	ICLL	0000	I 000235	IDCARD	0002	I 031603	IDTIDE	0000	I 000271	IDUM
0000	I 000251	IDUMY1	0000	I 000262	IDUMY2	0000	I 000254	IDUMY3	0002	I 016266	IFLAG
0002	I 020673	IFLOW	0000	I 000107	IHKP	0000	I 000304	IK	0000	I 000300	ILR
0000	I 000301	ILF	0002	I 032357	IMAX	0000	I 000243	IMXJMX	0002	I 032421	INETFL
0000	I 000250	INEW	0002	I 032431	IODISP	0002	I 032424	IONFLO	0002	I 032423	IONVEL
0002	I 022561	IP	0002	I 032422	IPDATA	0000	I 000236	IGHIN	0002	I 032430	ISAVQH
0002	I 021157	ITIDE	0000	I 000237	IVLTAP	0000	I 000217	I\$	0000	I 000226	J
0002	I 022333	JRAR	0003	I 006574	JCLL	0007	I 000000	JFLAG	0002	I 020767	JFLOW
0000	I 000152	JHKP	0000	I 000305	JK	0000	I 000302	JLB	0000	I 000303	JLF
0002	I 032360	JMAX	0002	I 022605	JP	0002	I 021253	JTIDE	0000	I 000231	K
0000	I 000244	KB	0000	I 000245	KD	0000	I 000276	KEPSAV	0000	I 000277	KG
0002	I 032412	KINDAT	0002	I 032413	KINIGH	0000	I 000232	KK	0002	I 032433	KO
0002	I 032420	KODISP	0002	I 032416	KONETF	0002	I 032415	KONETV	0002	I 032417	KOTVEL
0003	I 004623	KOUNT	0002	032410	KOUTCD	0002	I 032414	KOUTDA	0002	032411	KOUTPP
0000	I 000222	KPRINT	0005	I 000001	KQCTP	0005	I 000002	KQFTP	0005	I 000000	KRSOFN
0000	I 000233	KT	0002	I 032472	LINMAX	0002	I 032407	M	0000	I 000275	MA


```

00103      *      G42(80),G43(80),IDTIDE(60),TIDE1(76),TIDE2(76),TIDE3(76),
00104      *      TIDE4(76)
00105      *      COMMON IMAX,JMAX,DS,G,GCDT04,GDT0DS,DI,DT2,TIME,TCOUNT,TPER,PTIME,HYD 0028
00106      *      OMEGA,PHI,W,THETA,XW,YW,NREEF,NFLOW,NTIDE,DTODS,TMARK,HYD 0029
00107      *      TIMVEL,M,KOUTCD,KOUTPP,KINDAT,KINIGH,KOUTDA,KONETV,KONETF,HYD 0030
00108      *      KOTVEL,KODISP,INETFL,IPDATA,IONVEL,IONFLO,NPLOT,R,E,
00109      *      ISAVQH,IODISP,DT02DS,KOHYD 0032
00110      *      COMMON CON1,CON2,AO(4),C1(4),C2(4),C3(4),PHI1(4),PHI2(4),PHI3(4)
00111      *      COMMON LINMAX,TID1,TID2,TID3,TID4
00112      *      COMMON/MQ/FX(35,35),FY(35,35),SQTG,KOUNT,ICLL(1000),JCLL(1000)
00113      *      COMMON/ALL/QX(35,35),QY(35,35),H(35,35)
00114      *      COMMON/MRG/KRSOFN,KQCTP,KQFTP
00115      *      COMMON/MPRC/HSIFT,TIMTOT
00116      *      COMMON/MQPI/JFLAG(35,35)
00117      *      DIMENSION CODE(3),REMARK(4,17)
00118      *      DIMENSION IHKP(35),JHKP(35)
00119      *      DATA SIDE/4HSIDE/,TOP/4HTOP /
00120      *      DATA CODE/4HCARD,4HTAPE,4HBOTH/,ENDF/4HENDF/,ENDT/4HENDT/
00121      *      DATA IFLOW/9,10,11,12,13,14,15,16,17,18,19,8*8,3*21,4*1,32,4,32,
00122      *      14,32,4,20,29,31,32,32,20,20,12,13,14,15,16,3*20,13*0/
00123      *      DATA JFLOW/11*4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,22,23,23,
00124      *      124,24,6*25,26,27,6*28,29,30,13*0/
00125      *
00126      *      KOUNT=0
00127      *      KPRINT=1.0
00128      *      PTIME = 60.0
00129      *      OMEGA = 7.29E-05
00130      *      G = 32.1725 * 3600.0
00131      *      SQTG=SQRT(G)
00132      *      GC = 32.1725 / 2.21
00133      *      PI = 3.1416
00134      *
00135      *      DO 3031 I = 1, 4
00136      *      READ (5,3032) (D(I,J),J=1,20)
00137      *      3032 FORMAT (2A4,1X,F2.0,1X,17A4)
00138      *      3031 CONTINUE
00139      *
00140      *      STEP-01
00141      *      SET CONSTANTS.
00142      *
00143      *      STEP-02
00144      *      READ TITLE CARDS.
00145      *
00146      *      DO 3031 I = 1, 4
00147      *      READ (5,3032) (D(I,J),J=1,20)
00148      *      3032 FORMAT (2A4,1X,F2.0,1X,17A4)
00149      *      3031 CONTINUE
00150      *
00151      *      CORR0029
00152      *      CORR0028
00153      *      CORR0030
00154      *      CORR0031
00155      *      CORR0032
00156      *      HYD 0066***-1
00157      *      HYD 0067
00158      *      HYD 0068
00159      *      HYD 0069
00160      *      HYD 0070
00161      *      HYD 0071
00162      *      HYD 0072
00163      *      HYD 0073
00164      *
00165      *      *NEW
00166      *      *NEW
00167      *      *NEW
00168      *      *NEW
00169      *      *NEW
00170      *      *NEW
00171      *      *NEW
00172      *      *NEW
00173      *      *NEW
00174      *      *NEW
00175      *      *NEW
00176      *      *NEW
00177      *      *NEW
00178      *      *NEW
00179      *      *NEW
00180      *      *NEW
00181      *      *NEW
00182      *      *NEW
00183      *      *NEW
00184      *      *NEW
00185      *      *NEW
00186      *      *NEW
00187      *      *NEW
00188      *      *NEW
00189      *      *NEW
00190      *      *NEW
00191      *      *NEW
00192      *      *NEW
00193      *      *NEW
00194      *      *NEW
00195      *      *NEW
00196      *      *NEW
00197      *      *NEW
00198      *      *NEW
00199      *      *NEW
00200      *      *NEW
00201      *      *NEW
00202      *      *NEW
00203      *      *NEW
00204      *      *NEW
00205      *      *NEW
00206      *      *NEW
00207      *      *NEW
00208      *      *NEW
00209      *      *NEW
00210      *      *NEW
00211      *      *NEW
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INSERT 1

STEP-01
SET CONSTANTS.

STEP-02
READ TITLE CARDS.

DO 3031 I = 1, 4
READ (5,3032) (D(I,J),J=1,20)
3032 FORMAT (2A4,1X,F2.0,1X,17A4)
3031 CONTINUE

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00156 READ (5,3044) DUM1,DUM2,(W2(I), I=1,15)
00166 FORMAT (15X,17A4,///)
00167 FORMAT (20A4)
00170 WRITE (6,2055)
00172 WRITE (6,3033)
00174 FORMAT (15X,40H CARD CARD
00175 40HDESCRIPTION
00176 NO
00177 15X,40H TYPE
00178 15X,40H TITLE
00179 40H-----
00180 DO 3034 I = 1, 4
00181 K = D(I,3)
00182 WRITE (6,3035) (D(I,J),J=1,2), K, (D(I,J),J=4,20)
00183 FORMAT (15X,2A4,1X,I2,1X,17A4)
00184 CONTINUE
00185 WRITE (6,3043) DUM1,DUM2,(W2(I), I=1,15)
00186 * THE TEST FOR EQUALITY BETWEEN NON-INTEGERS MAY NOT BE MEANINGFUL.
00187 IF (DUM1.NE.ENDT) GO TO 3777
00188 DO 3036 I = 1, 4
00189 K = D(I,3)
00190 DO 3036 J = 4, 20
00191 KK = J - 3
00192 REMARK(K,KK) = D(I,J)
00193 CONTINUE
00194 3036 CONTINUE
00195 C
00196 C
00197 C
00198 C
00199 C
00200 DO 3042 I=1,9
00201 READ (5,3045) (D(I,J),J=1,15)
00202 FORMAT (2A4,1X,F2.0,1X,10A4,6X,A4,13X,F2.0)
00203 CONTINUE
00204 READ (5,3044) DUM1,DUM2,(W2(I), I=1,15)
00205 WRITE (6,2055)
00206 WRITE (6,3057)
00207 3057 FORMAT (15X,40H CARD CARD
00208 40H TYPE
00209 15X,40H TYPE
00210 40H
00211 15X,40H
00212 40H-----
00213 DO 3058 I=1,9
00214 * DESCRIPTION
00215 * TYPE OF INPUT/OUTPUT TAPE
00216 * NO
00217 * CARD,TAPE,BOTH, OR NONE NO
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[illegible]

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00401 151* C KGFTP READ AND KGCTP UNUSED IN FINE GRID MODEL.
00402 152* C
00403 153* C 3068 CONTINUE
00404 154* C
00405 155* C STEP-04
00406 156* C READ BASIC MODEL OPERATION
00407 157* C PARAMETERS.
00408 158* C
00409 159* C DO 3024 I=1,20
00410 160* C READ (5,3025) (D(I,J),J=1,19)
00411 161* C 3025 FORMAT (2A4,2X,F2.0,2X,A1,14A4,2X,F7.0)
00412 162* C 3024 CONTINUE
00413 163* C READ (5,3044) DUM1,DUM2,(W2(I), I=1,15)
00414 164* C WRITE (6,2055)
00415 165* C WRITE (6,3027)
00416 166* C 3027 FORMAT (15X,40H CARD CARD
00417 167* C * 40HIPTION
00418 168* C * 15X,40H TYPE NO
00419 169* C * ,40H
00420 170* C * 15X,40H ----
00421 171* C * 40H-----
00422 172* C DO 3028 I=1,20
00423 173* C K = D(I,3)
00424 174* C WRITE (6,3026) (D(I,J),J=1,2), K, (D(I,J),J=4,19)
00425 175* C 3026 FORMAT (15X,2A4,2X,I2,2X,A1,14A4,2X,F7.1)
00426 176* C 3028 CONTINUE
00427 177* C WRITE (6,3043) DUM1,DUM2,(W2(I), I=1,15)
00428 178* C *DIAGNOSTIC* THE TEST FOR EQUALITY BETWEEN NON-INTEGERS MAY NOT BE MEANINGFUL.
00429 179* C IF (DUM1,NE.ENDF) GO TO 3777
00430 180* C DO 3021 I=1,20
00431 181* C K = D(I,3)
00432 182* C DATA = D(I,19)
00433 183* C GO TO (3011, 3012, 3013, 3014, 3015, 3016, 3017, 3018, 3022,
00434 184* C * 3019, 3020, 3001, 3002, 3003, 3004, 3005, 3006, 3007,
00435 185* C * 3008,7301),K
00436 186* C 3011 KR5OFN=DATA
00437 187* C C
00438 188* C KR5OFN = 1 FOR COARSE GRID PRODUCTION RUN.
00439 189* C KR5OFN = 2 FOR FINE GRID PRODUCTION RUN.
00440 190* C KR5OFN = 3 FOR COARSE GRID NON-PRODUCTION RUN.
00441 191* C GO TO 3021
00442 192* C 3012 IPDATA = DATA
00443 00500
00444 00501

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HYD 0148 *NEW
HYD 0149 *NEW
HYD 0150
HYD 0151
HYD 0152
HYD 0153 *NEW
HYD 0155*-1
HYD 0156
HYD 0157
HYD 0159
HYD 0160
HYD 0161
HYD 0162
CORR0009
HYD 0164
HYD 0165
HYD 0166 *NEW
HYD 0168*-1
HYD 0169
HYD 0170
HYD 0171
HYD 0173 *NEW
HYD 0175*-1
HYD 0176
HYD 0177
*NEW
*NEW
*NEW
*NEW
*NEW
*NEW
HYD 0180*-2
HYD 0181

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00502	193*	GO TO 3021	HYD 0182
00503	194*	3013 NPLOT = DATA	HYD 0183
00504	195*	GO TO 3021	HYD 0184
00505	196*	3014 TIMTOT = DATA	HYD 0185
00506	197*	GO TO 3021	HYD 0186
00507	198*	3015 TIMEIN = DATA	HYD 0187
00510	199*	GO TO 3021	HYD 0188
00511	200*	3016 TIMVEL = DATA	HYD 0189
00512	201*	GO TO 3021	HYD 0190
00513	202*	3017 TPER = DATA	HYD 0191
00514	203*	GO TO 3021	HYD 0192
00515	204*	3018 W = DATA	HYD 0193
00516	205*	GO TO 3021	HYD 0194
00517	206*	3019 R = DATA	HYD 0195
00520	207*	GO TO 3021	HYD 0196
00521	208*	3020 E = DATA	HYD 0197
00522	209*	GO TO 3021	HYD 0198
00523	210*	3022 THEIA = DATA	HYD 0199
00524	211*	GO TO 3021	CORR0013
00525	212*	3001 ANGCOR = DATA	CORR0014
00526	213*	GO TO 3021	CORR0015
00527	214*	3002 IMAX = DATA	CORR0016
00530	215*	GO TO 3021	CORR0017
00531	216*	3003 JMAX = DATA	CORR0018
00532	217*	GO TO 3021	CORR0019
00533	218*	3004 OS = DATA	CORR0020
00534	219*	GO TO 3021	CORR0021
00535	220*	3005 DT = DATA	CORR0022
00536	221*	DT=DT/60.	*NEW
00537	222*	GO TO 3021	CORR0023
00540	223*	3006 PHI = DATA	CORR0024
00541	224*	GO TO 3021	
00542	225*	3007 LINMAX = DATA	
00543	226*	GO TO 3021	
00544	227*	3008 INETFL = DATA	
00545	228*	GO TO 3021	
00546	229*	730 HSHIFT=DATA	
00547	230*	3021 CONTINUE	
00551	231*	IMXJMX = IMAX * JMAX	HYD 0200
00552	232*	KB = 0	CORR0025
00553	233*	KT = 0	
00554	234*	KD = 0	CORR0026
00555	235*	GCDT04 = 1.26 * GC * DT	CORR0027
			CORR0033

0.63

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00556 236*
00557 237*
00560 238*
00561 239*
00562 240*
00563 241*
00564 242*
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00570 244*
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00661 271*
00662 272*
00664 273*
00666 274*
00667 275*
00670 276*
00671 277*
00672 278*

GDTODS = G * DT / (2.0 * DS)
DTODS = DT / DS
DTODS = DTODS / 2.0
DT2 = DT / 2.0
KO = 0
GO TO 3666
3777 WRITE (6,2055)
3077 WRITE (6,3077)
3077 FORMAT (15X,29H*** THERE WAS A DATA BUST ***)
GO TO 9999
3666 CONTINUE
497 CONTINUE
IBASIC = IONFLO + INETFL + IONVEL + IODISP + IVLTA
TMAX = TIMEIN+TIMTOT

STEP-05
READ BASIC CELL DATA.

IF (IDCARD.EQ.2) REWIND KINDAT
INew = IDCARD+1
IF (KRSOFN.EQ.2) GO TO 780
DO 781 M=1,60
IFLOW(M)=0
781 JFLOW(M)=0
780 DO 517 K=1,IMXJMX
GO TO (3777,5160,5150,3777), INew
5160 READ 516,I,J,IDUMY1,DUMY1,DUMY2,IDUMY3,DUMY4,DUMY5,DUMY6,
*DUMY7,DUMY8,IDUMY2,DUMY9,DUMY10
516 FORMAT (16X,3(I2,1X),F4.0,1X,F5.3,1X,I2,1X,F7.0,
* 1X,2(F5.3,1X,F4.1,1X),I2,1X,2A4)
GO TO 5515
5150 READ (KINDAT,516) I,J,IDUMY1,DUMY1,DUMY2,IDUMY3,DUMY4,DUMY5,
*DUMY6,DUMY7,DUMY8,IDUMY2,DUMY9,DUMY10
5515 IFLAG(I,J) = IDUMY1
Z(I,J) = DUMY1
Z(I,J) = Z(I,J)-HSHIFT
IF (IFLAG(I,J).EQ.1) Z(I,J) = 9999.
IF (IFLAG(I,J).EQ.1) GO TO 110
KOUNT=KOUNT+1
ICLL(KOUNT)=I
JCLL(KOUNT)=J
110 CONTINUE
F(I,J) = DUMY2

CORR0034
CORR0035
CORR0036
CORR0037
CORR0038
HYD 0201
HYD 0202
HYD 0203
HYD 0204
CORR0039
HYD 0205
HYD 0218*-12
HYD 0222
HYD 0223
HYD 0224
HYD 0225
HYD 0226
CORR0040
HYD 0228
*NEW
*NEW
*NEW
*NEW
CORR0041*-1
HYD 0231
HYD 0232
*NEW
*-1
HYD 0235
HYD 0236
HYD 0237
HYD 0238
HYD 0239
*NEW
*NEW
*NEW
*NEW
*NEW
*NEW
*NEW
HYD 0240

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00673      279*      H(I,J) = IDUMY3
00674      280*      HN(I,J) = DUMMY4
00675      281*      QX(I,J) = DUMMY5
00676      282*      QXN(I,J) = DUMMY6
00677      283*      QY(I,J) = DUMMY7
00700      284*      QYN(I,J) = DUMMY8
00701      285*      IF (IDUMY2.LE.0.OR.IDUMY2.GT.20) GO TO 522
00703      286*      NPRPLT = IDUMY2
00704      287*      STATON(1,NPRPLT) = DUMMY9
00705      288*      STATON(2,NPRPLT) = DUMMY10
00706      289*      IP(NPRPLT) = I
00707      290*      JP(NPRPLT) = J
00710      291*      CONTINUE
00711      292*      CONTINUE
00713      293*      DO 856 J=1,JMAX
00716      294*      DO 856 I=1,IMAX
00721      295*      FX(I,J)=(F(I,J)+F(I+1,J))*2
00722      296*      FY(I,J)=(F(I,J)+F(I,J+1))*2
00725      297*      IF (IDCARD.EQ.2) REWIND KINDAT
00727      298*      READ (5,3044) DUM1,DUM2,(W2(I), I=1,15)
00737      299*      WRITE (6,3043) DUM1,DUM2,(W2(I), I=1,15)
00747      *DIAGNOSTIC*
00747      300*      THE TEST FOR EQUALITY BETWEEN NON-INTEGERS MAY NOT BE MEANINGFUL.
00751      301*      IF (DUM1.NE.ENDF) GO TO 3777
00754      302*      DO 450 N=1,KOUNT
00755      303*      I=ICLL(N)
00756      304*      J=JCLL(N)
00757      305*      IDUMY3 = H(I,J)
00760      306*      DUMMY4 = HN(I,J)
00761      307*      DUMMY5 = QX(I,J)
00762      308*      DUMMY6 = QXN(I,J)
00763      309*      DUMMY7 = QY(I,J)
00764      310*      DUMMY8 = QYN(I,J)
00766      311*      IF (IDUMY3.LE.0.0000001) GO TO 518
00767      312*      KT = KT+1
00770      313*      ITIDE(KT) = I
00771      314*      JTIDE(KT) = J
00772      315*      IDTIDE(KT) = IDUMY3
00773      316*      CT(KT) = 2.0
00774      317*      CONTINUE
00775      318*      DUMMY = ABS(DUMMY4)
00777      319*      IF (DUMMY.LE.0.001) GO TO 519
01000      320*      KD = KD+1
           IFLOW(KD) = I

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522

517

856

518

HYD 0241

HYD 0242

HYD 0243

HYD 0244

HYD 0245

HYD 0246

HYD 0248**--1

HYD 0249

HYD 0250

HYD 0251

HYD 0252

HYD 0253

HYD 0254

HYD 0258**--2

HYD 0259

HYD 0260

HYD 0261

HYD 0262

HYD 0263

HYD 0265

HYD 0266

HYD 0267

HYD 0268

HYD 0269

HYD 0271**--1

HYD 0272

HYD 0273

HYD 0274

HYD 0275

CORR0043

CORR0048

01001	321*	JFLOW(KD) = J	HYD 0276	
01002	322*	GINFLO(KD) = DUMMY4	HYD 0277	
01003	323*	CONTINUE	HYD 0278	
01004	324*	IF (DUMMY5.LE.0.000001) GO TO 520	HYD 0279	
01006	325*	KB = KB+1	HYD 0280	
01007	326*	IBAR(KB) = I	HYD 0281	
01010	327*	JBAR(KB) = J	HYD 0282	
01011	328*	CELSID(KR) = SIDE	HYD 0283	
01012	329*	CB(KB) = DUMMY5	HYD 0284	*NEW
01013	330*	ZB(KB)=DUMMY6		*NEW
01014	331*	ZB(KB) = ZB(KB)-HSHIFT		*NEW
01015	332*	IF (ZB(KB).GT.0.)CB(KB)=0.5	HYD 0286***-1	
01017	333*	CONTINUE	HYD 0287	
01020	334*	IF (DUMMY7.LE.0.000001) GO TO 521	HYD 0288	
01022	335*	KB = KB+1	HYD 0289	
01023	336*	IBAR(KR) = I	HYD 0290	
01024	337*	JBAR(KB)=J	HYD 0291	
01025	338*	CELSID(KB) = TOP	HYD 0292	*NEW
01026	339*	CB(KB) = DUMMY7		*NEW
01027	340*	ZB(KB)=DUMMY8		*NEW
01030	341*	ZB(KB) = ZB(KB)-HSHIFT	HYD 0294***-1	
01031	342*	IF (ZB(KB).GT.0.)CB(KR)=0.5	HYD 0295	
01033	343*	CONTINUE	HYD 0296	
01034	344*	CONTINUE		*NEW
01036	345*	NREEF=KB		*NEW
01037	346*	GO TO (761,760,761),KRSOFN		*NEW
01037	347*			*NEW
01037	348*			*NEW
01037	349*			*NEW
01040	350*			*NEW
01041	351*			*NEW
01042	352*			*NEW
01043	353*			*NEW
01044	354*			*NEW
01044	355*			*NEW
01044	356*			*NEW
01044	357*			*NEW
01044	358*			*NEW
01044	359*			*NEW
01045	360*			*NEW
01053	361*			*NEW
01061	362*			*NEW
01067	363*			*NEW

519		JFLOW(KD) = J	HYD 0276
		GINFLO(KD) = DUMMY4	HYD 0277
		CONTINUE	HYD 0278
		IF (DUMMY5.LE.0.000001) GO TO 520	HYD 0279
		KB = KB+1	HYD 0280
		IBAR(KB) = I	HYD 0281
		JBAR(KB) = J	HYD 0282
		CELSID(KR) = SIDE	HYD 0283
		CB(KB) = DUMMY5	HYD 0284
		ZB(KB)=DUMMY6	
		ZB(KB) = ZB(KB)-HSHIFT	
		IF (ZB(KB).GT.0.)CB(KB)=0.5	
		CONTINUE	
520		IF (DUMMY7.LE.0.000001) GO TO 521	
		KB = KB+1	
		IBAR(KR) = I	
		JBAR(KB)=J	
		CELSID(KB) = TOP	
		CB(KB) = DUMMY7	
		ZB(KB)=DUMMY8	
		ZB(KB) = ZB(KB)-HSHIFT	
		IF (ZB(KB).GT.0.)CB(KR)=0.5	
521		CONTINUE	
450		CONTINUE	
		NREEF=KB	
		GO TO (761,760,761),KRSOFN	

C		NFLOW MUST BE ASSIGNED ANOTHER VALUE FOR OTHER CONFIGURATIONS.	
C			
C			
	760	NFLOW=47	
		GO TO 762	
	761	NFLOW=KD	
		NTIDE=KT	
	762	GO TO (738,901,738),KRSOFN	
C			
C			
C			
	738	READ 3044, (DUMDAT, I=1,3)	
		READ 3076, (TIDE1(I), I=1,26)	
		READ 3044, (DUMDAT, I=1,3)	
		READ 3076, (TIDE2(I), I=1,26)	

		STEP-06	
		READ EXCITATION TIDE DATA.	
		FOR COARSE GRID MODELS ONLY.	

HYD 0299***-2	
HYD 0300	
HYD 0301	
HYD 0302	

Insert 2

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01075 364*      READ 3044, (DUMDAT, I=1,3)
01103 365*      READ 3076, (TIDE3(I), I=1,26)
01111 366*      READ 3044, (DUMDAT, I=1,3)
01117 367*      READ 3076, (TIDE4(I), I=1,26)
01125 368*      READ (5,3044) DUM1,DUM2,(W2(I), I=1,15)
01135 369*      WRITE (6,3043) DUM1,DUM2,(W2(I), I=1,15)
01145 370*      *DIAGNOSTIC* THE TEST FOR EQUALITY BETWEEN NON-INTEGERS MAY NOT BE MEANINGFUL.
01145 371*      IF (DUM1.NE.ENDF) GO TO 3777
01147 372*      3076 FORMAT (16F5.2)
01150 373*      DO 301 I=1,26
01153 374*      TIDE1(I) = TIDE1(I)-HSHIFT
01154 375*      TIDE2(I) = TIDE2(I)-HSHIFT
01155 376*      TIDE3(I) = TIDE3(I)-HSHIFT
01156 377*      TIDE4(I)=TIDE4(I)-HSHIFT
01157 378*      301 CONTINUE
01161 379*      TID1 = TIDE1(I)
01162 380*      TID2 = TIDE2(I)
01163 381*      TID3 = TIDE3(I)
01164 382*      TID4=TIDE4(I)
01164 383*      C
01164 384*      C
01164 385*      C
01164 386*      C
01165 387*      IF (KRSOFN.EQ.3) GO TO 901
01167 388*      READ(5,350) (IHKP(N), JHKP(N), N=1,32)
01176 389*      350 FORMAT(20(2I2))
01176 390*      C
01176 391*      C
01176 392*      C
01176 393*      C
01177 394*      901 DO 711 I=1,IMAX
01202 395*      DO 711 J=1,JMAX
01205 396*      711 JFLAG(I,J)=11
01210 397*      710 READ(5,708) I,J,IDUM
01215 398*      IF (I.EQ.0) GO TO 709
01217 399*      JFLAG(I,J)=IDUM
01220 400*      GO TO 710
01221 401*      708 FORMAT(3I4)
01221 402*      C
01221 403*      C
01221 404*      C
01221 405*      C

STEP 07
CELL IDENTIFICATION FOR STORING H-VALUES
COARSE GRID PRODUCTION.

STEP 08
INPUT TWO-DIGIT FLAGS FOR CONVECTION.
HYD 0313*-1
HYD 0317*-2

STEP 09
PRINT PROGRAM CONTROL INFORMATION.

```

```

01222 406* 709 PRINT 2055
01224 407* 2055 FORMAT(1H1)
01225 408* DO 3039 I = 1, 4
01230 409* WRITE (6,87) (REMARK(I,J),J=1,17)
01236 410* 87 FORMAT (15X,17A,/)
01237 411* 3039 CONTINUE
01241 412* PRINT 2055
01243 413* PRINT 199
01245 414* 199 FORMAT (10X,27HMODEL-OPERATION INFORMATION,/)
01246 415* IF(1DCARD.EQ.0) GO TO 201
01250 416* PRINT 202
01252 417* 202 FORMAT(15X,37HBASIC CELL INPUT DATA READ FROM CARDS,/)
01253 418* GO TO 203
01254 419* 201 PRINT 204,KINDAT
01257 420* 204 FORMAT(15X,46HBASIC CELL INPUT DATA READ FROM TAPE UNIT NO. ,12,/)
01260 421* 203 CONTINUE
01261 422* IF(1QHIN.EQ.0)GO TO 205
01263 423* IF(1QHIN.EQ.2)GO TO 207
01265 424* PRINT 206
01267 425* 206 FORMAT(15X,37HINITIAL HYDRODYNAMICS READ FROM CARDS,/)
01270 426* GO TO 208
01271 427* 207 PRINT 209,KINIGH
01274 428* 209 FORMAT(15X,46HINITIAL HYDRODYNAMICS READ FORM TAPE UNIT NO. ,12,/)
01275 429* GO TO 208
01276 430* 205 PRINT 210
01300 431* 210 FORMAT(15X,39HINITIAL HYDRODYNAMICS SET EQUAL TO ZERO,/)
01301 432* 208 CONTINUE
01302 433* GO TO (213, 316, 215), IPDATA
01303 434* 316 PRINT 214
01305 435* 214 FORMAT(15X,68HALL INPUT DATA (EXCLUDING INITIAL HYDRODYNAMICS) PRIHYD 0357
01306 436* .NTED AND LABELED,/)
01307 437* GO TO 213
01311 438* 215 PRINT 217
01311 439* 217 FORMAT(15X,83HALL INPUT DATA (EXCLUDING INITIAL HYDRODYNAMICS AND
01311 440* .MANNINGS N) PRINTED AND LABELED,/)
01312 441* 213 CONTINUE
01313 442* IF (IBASIC.NE.0) GO TO 218
01315 443* PRINT 219
01317 444* 219 FORMAT(15X,76HONLY TIDAL AMPLITUDES AND FLOWS WERE COMPUTED AND PRHYD 0366
01317 445* .INTED FOR SELECTED CELLS,/)
01320 446* GO TO 216
01321 447* 218 PRINT 2180
01323 448* 2180 FORMAT(15X,71HTIDAL AMPLITUDES AND FLOWS WERE COMPUTED AND PRINTEDHYD 0370

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*NEW
0322*-1

HYD 0327
HYD 0328
HYD 0329
HYD 0330
HYD 0331
HYD 0332
HYD 0333
HYD 0336*-1
HYD 0337
HYD 0338
HYD 0339
HYD 0340
HYD 0341
HYD 0342
HYD 0343
HYD 0344
HYD 0345
HYD 0346
HYD 0347
HYD 0348
HYD 0349
HYD 0350
HYD 0351
HYD 0352
HYD 0353
CORR0076
CORR0077
HYD 0357
HYD 0358
HYD 0359
HYD 0360
HYD 0361
HYD 0362
HYD 0363
CORR0078
HYD 0365
PRHYD 0366
HYD 0367
HYD 0368
HYD 0369
HYD 0370

01323	449*	• FOR SELECTED CELLS,/) HYD 0371
01324	450*	IF (INETFL,NE.1) GO TO 275
01326	451*	PRINT 274
01330	452*	274 FORMAT (15X,52HNET FLOWS WERE COMPUTED FOR ALL CELLS BUT NOT STORE
01330	453*	*D,/) 274
01331	454*	GO TO 243
01332	455*	275 CONTINUE
01333	456*	INew = IONFLO + 1
01334	457*	GO TO (240, 347, 242, 241), INew
01335	458*	347 PRINT 245
01337	459*	GO TO 243
01340	460*	240 PRINT 244
01342	461*	244 FORMAT (15X,27HNET FLOWS WERE NOT COMPUTED,/) 244
01343	462*	GO TO 243
01344	463*	241 PRINT 245
01346	464*	245 FORMAT(15X,45HNET FLOWS FOR ALL CELLS WERE PUNCHED ON CARDS,/) 245
01347	465*	242 PRINT 246,KONETf
01352	466*	246 FORMAT(15X,53HNET FLOWS FOR ALL CELLS WERE STORED ON TAPE UNIT NO. 246
01352	467*	• ,12,/) 246
01353	468*	243 CONTINUE
01354	469*	INew = IONVEL + 1
01355	470*	GO TO (233, 337, 235, 234), INew
01356	471*	337 PRINT 238
01360	472*	GO TO 236
01361	473*	233 PRINT 237
01363	474*	237 FORMAT (15X,32HNET VELOCITIES WERE NOT COMPUTED,/) 237
01364	475*	GO TO 236
01365	476*	234 PRINT 238
01367	477*	238 FORMAT (15X,61HNET VELOCITIES AND DEPTHS FOR ALL CELLS WERE PUNCHEHYD 0407
01367	478*	*D ON CARDS,/) 238
01370	479*	235 PRINT 239,KONETV
01373	480*	239 FORMAT (15X,69HNET VELOCITIES AND DEPTHS FOR ALL CELLS WERE STOREDHYD 0411
01373	481*	* ON TAPE UNIT NO. ,12,/) 239
01374	482*	236 CONTINUE
01375	483*	INew = IODISP + 1
01376	484*	GO TO (249,352, 251, 250), INew
01377	485*	352 PRINT 254
01401	486*	GO TO 252
01402	487*	249 PRINT 253
01404	488*	253 FORMAT (15X,90HAVERAGE VELOCITIES AND DISPERSION COEFFICIENTS WEREHYD 0425
01404	489*	* NOT PUNCHED ON CARDS OR STORED ON TAPE,/) 253
01405	490*	GO TO 252
01406	491*	250 PRINT 254
		HYD 0428
		HYD 0427
		HYD 0426
		HYD 0425
		HYD 0424
		HYD 0423
		HYD 0422
		HYD 0421
		HYD 0420
		HYD 0419
		HYD 0418
		HYD 0417
		HYD 0416
		HYD 0415
		HYD 0414
		HYD 0413
		HYD 0412
		HYD 0411
		HYD 0410
		HYD 0409
		HYD 0408
		HYD 0407
		HYD 0406
		HYD 0405
		HYD 0404
		HYD 0403
		HYD 0402
		HYD 0401
		HYD 0400
		HYD 0399
		HYD 0398
		HYD 0397
		HYD 0396
		HYD 0395
		HYD 0394
		HYD 0393
		HYD 0392
		HYD 0391
		HYD 0390
		HYD 0389
		HYD 0388
		HYD 0387
		HYD 0386
		HYD 0385
		HYD 0384
		HYD 0383
		HYD 0382
		HYD 0381
		HYD 0380
		HYD 0379
		HYD 0378
		HYD 0377
		HYD 0376
		HYD 0375
		HYD 0374
		HYD 0373
		HYD 0372
		HYD 0371

01410	492*	254	FORMAT (15X,82HAVERAGE VELOCITIES, AND DISPERSION COEFFICIENTS FOR	HYD 0429	
01410	493*		*ALL CELLS WERE PUNCHED ON CARDS,/))	HYD 0430	
01411	494*	251	PRINT 255,KODISP	HYD 0432	
01414	495*	255	FORMAT (15X,90HAVERAGE VELOCITIES AND DISPERSION COEFFICIENTS FOR	HYD 0433	
01414	496*		*ALL CELLS WERE STORED ON TAPE UNIT NO. ,12,/))	HYD 0434	
01415	497*	252	CONTINUE	HYD 0435	
01416	498*		INew = IVLTAP + 1		*NEW
01417	499*		GO TO (271,271,272,271), INew		**--1
01420	500*	271	PRINT 273		
01422	501*	273	FORMAT (15X,48INSTANTANEOUS VELOCITIES WERE NOT STORED ON TAPE,/))		
01423	502*		GO TO 247		
01424	503*	272	PRINT 248, KOTVEL,TIMVEL		
01430	504*	248	FORMAT(15X,54INSTANTANEOUS VELOCITIES WERE STORED ON TAPE UNIT NOHYD	0459	
01430	505*		..,12,4H AT ,F5.1,22H MINUTE TIME INTERVALS,/))	HYD 0460	
01431	506*	247	CONTINUE		
01432	507*	216	CONTINUE	HYD 0436	
01433	508*		INew = ISAVGH + 1	CORR0088	
01434	509*		GO TO (226, 329, 227, 228), INew	CORR0089	
01435	510*	329	PRINT 229	CORR0090	
01437	511*	229	FORMAT(15X,52HENDING VALUES OF HYDRODYNAMICS WERE PUNCHED ON CARDSHYD	0441	
01437	512*		..,/))	HYD 0442	
01440	513*		GO TO 230	HYD 0443	
01441	514*	227	PRINT 231,KOUTDA	HYD 0444	
01444	515*	231	FORMAT(15X,60HENDING VALUES OF HYDRODYNAMICS WERE STORED ON TAPE	UHYD 0445	
01444	516*		.NIT NO. ,12,/))	HYD 0446	
01445	517*		GO TO 230	HYD 0447	
01446	518*	228	PRINT 229	HYD 0448	
01450	519*		PRINT 231,KOUTDA	HYD 0449	
01453	520*		GO TO 230	HYD 0450	
01454	521*	226	PRINT 232	HYD 0451	
01456	522*	232	FORMAT(15X,45HENDING VALUES OF HYDRODYNAMICS WERE NOT SAVED,/))	HYD 0452	
01457	523*	230	CONTINUE	HYD 0453	
01460	524*		PRINT 257,NPLOT	HYD 0454	
01463	525*	257	FORMAT(15X,36HTIDAL AMPLITUDE PLOTS WERE MADE FOR ,12,25H SELECTEDHYD	0455	
01463	526*		. STATIONS IN BAY,/))	HYD 0456	
01464	527*		PRINT 258,TIMTOT	HYD 0462	
01467	528*	258	FORMAT(15X,31HMODEL WAS OPERATED TO SIMULATE ,F5.1,19H HOURS OF RE		*NEW
01467	529*		.AL TIME,/))	HYD 0464***-1	
01470	530*		GO TO (740,741,742),KRISOFN		*NEW
01471	531*	740	WRITE(6,763)		*NEW
01473	532*		GO TO 742		*NEW
01474	533*	763	FORMAT(//,15X,'COARSE GRID MODEL',//))		*NEW
01475	534*	741	WRITE(6,764)		*NEW

[illegible]

[illegible]

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01755 620* 707 QX(20,J)=QINFLO(J+17)
01757 621* QX(32,22)=QINFLO(27)
01760 622* QX(4,23)=QINFLO(28)
01761 623* QX(32,23)=QINFLO(29)
01762 624* QX(4,24)=QINFLO(30)
01763 625* QX(32,24)=QINFLO(31)
01764 626* QX(4,25)=QINFLO(32)
01765 627* QX(20,25)=QINFLO(33)
01766 628* QY(29,25)=QINFLO(34)
01767 629* QY(31,25)=QINFLO(35)
01770 630* QX(32,25)=QINFLO(36)
01771 631* QY(32,25)=QINFLO(37)
01772 632* QX(20,26)=QINFLO(38)
01773 633* QX(20,27)=QINFLO(39)
01774 634* 5000 DO 36 J=1,JMAX
01777 635* DO 36 I=1,IMAX
02002 636* D(I,J) = H(I,J)-Z(I,J)
02003 637* IF (D(I,J).GT.0.0) GO TO 60
02005 638* D(I,J) = 0.1
02006 639* H(I,J) = Z(I,J)
02007 640* 60 CONTINUE
02010 641* QXN(I,J) = 0.0
02011 642* QYN(I,J) = 0.0
02012 643* HN(I,J) = 0.0
02013 644* IF (Z(I,J).GT.0.)HN(I,J)=Z(I,J)
02015 645* 36 CONTINUE
02020 646* CALL ZEROS
02021 647* CON1 = DT2+TPER
02022 648* CON2 = 0.0
02023 649* CALL PRINTT
02024 650* IF (NPLOT.EQ.0) GO TO 599
02026 651* IF (TIME.GT.TPLOT) CALL HPLOT
02030 652* 599 CONTINUE
02031 653* IF ( I LVLTAP.EQ.0)GO TO 600
02033 654* REWIND KOTVEL
02034 655* IF (TIME.GT.TPLOT)CALL STRVEL
02036 656* 600 CONTINUE
02037 657* IF (IONVEL.GT.1) REWIND KONETV
02041 658* IF (IONFLO.GT.1) REWIND KONETF
02043 659* IF (IODISP.GT.1) REWIND KODISP
02043 660* C
02043 661* C
02043 662* C

```

STEP 11 CALCULATE TEMPORAL VARIATION OF

Line	Code	Statement	Variable
663*	C	99 TIME=TIME+DT	
664*	C	TCOUNT=TCOUNT+DT	
665*		GO TO (746,770,746),KRISOFN	
666*		770 READ(KQFTP)(QINFLO(MA),MA=1,NFLOW)	
667*		GO TO 453	
668*		746 CALL CALTID	
669*		453 DO 29 MA=1,NFLOW	
670*		29 QINFLO(MA)=QINFLO(MA)*60./DS	
671*		CALL CALCOH	
672*		IF (TCOUNT,LT,PTIME) GO TO 45	
673*			
674*			
675*	C	STEP 12	
676*	C	WRITE TIDAL AMPLITUDES AND VELOCITIES	
677*	C	FOR SPECIFIED STATIONS IN BAY.	
678*	C		
679*	C		
680*	C	CALL PRINTO	
681*		IF (NPLT,EQ,0) GO TO 45	
682*		IF (TIME,GT,TPLOT) CALL HPLOT	
683*		45 IF (IBASIC,EQ,0) GO TO 2095	
684*	C		
685*	C	STEP 13	
686*	C	CALCULATE NET VELOCITIES OR NET	
687*	C	FLows FOR ALL CELLS IF DESIRED.	
688*	C		
689*		IF (IONVEL,EQ,0) GO TO 661	
690*		IF (TIME,GT,TNET) CALL NETVQD	
691*		661 IF (IONFLO,GT,0.OR,INETFL,EQ,1) GO TO 662	
692*		GO TO 667	
693*		662 IF (TIME,GT,TNET) CALL NETFLO	
694*		667 CONTINUE	
695*	C		
696*	C	STEP 14	
697*	C	STORE INSTANTANEOUS VELOCITIES AT	
698*	C	SPECIFIED TIME INTERVALS IF DESIRED.	
699*	C		
700*		IF (IVLTAP,EQ,0) GO TO 777	
701*		IF (TIME,GT,TPLOT) CALL STRVEL	
702*		CONTINUE	
703*			
704*	777		
705*	C	STEP 15	
706*	C	CALCULATE AND STORE MEAN VELOCITIES	
707*	C		

[illegible]

[illegible]

05 FEB 73 12:06:34.707

QI FOR,* CALTID,CALTID
UNIVAC 1108 FORTRAN V LEVEL 2206 0023
THIS COMPILATION WAS DONE ON 05 FEB 73 AT 12:06:34

SUBROUTINE CALTID ENTRY POINT 000142

STORAGE USED (BLOCK, NAME, LENGTH)

0001 *CODE 000152
0000 *DATA 000033
0002 *BLANK 032477

EXTERNAL REFERENCES (BLOCK, NAME)

0003 NERR2\$ 0004 NERR3\$

STORAGE ASSIGNMENT FOR VARIABLES (BLOCK, TYPE, RELATIVE LOCATION, NAME)

0001	000110	1L	0001	000123	10L	0001	000074	131G	0001	000113	2L
0001	000056	20L	0001	000116	3L	0001	000121	4L	0002	032436	AO
0002	021443	CB	0002	021777	CELSID	0002	R 032434	CON1	0002	R 032435	CON2
0002	021063	CT	0002	032442	C1	0002	032446	C2	0002	032452	C3
0002	000000	D	0000	R 000003	DELT1	0000	R 000002	DELT2	0000	R 000004	DELT3
0000	R 000005	DELT4	0002	032361	DS	0002	R 032365	DT	0002	032404	DTODS
0002	032432	DT02DS	0002	R 032366	DT2	0002	032427	E	0002	013755	F
0002	032362	G	0002	032363	GCDT04	0002	032364	GDTODS	0002	R 021347	GTIDE
0002	031103	G1	0002	031223	G41	0002	031343	G42	0002	031463	G43
0002	023677	HF	0002	004622	HN	0002	022667	HPLT	0002	022655	HPRT
0002	023763	HPRTA	0002	022155	IBAR	0000	I 000007	ID	0002	I 031603	IDTIDE
0002	016266	IFLAG	0002	020673	IFLOW	0002	032357	IMAX	0002	032421	INETFL
0000	000013	INJP\$	0002	032431	IODISP	0002	032424	IONFLO	0002	032423	IONVEL
0002	022561	IP	0002	032422	IPDATA	0002	032430	ISAVGH	0002	021157	ITIDE
0002	022333	JBAR	0002	020767	JFLOW	0002	032360	JMAX	0002	022605	JP
0002	021253	JTIDE	0002	032412	KINDAT	0002	032413	KINIGH	0002	032433	KO
0002	032420	KODISP	0002	032416	KONETF	0002	032415	KONETV	0002	032417	KOTVEL
0002	032410	KOUTCD	0002	032414	KOUTDA	0002	032411	KOUTPP	0000	I 000006	KT
0002	032472	LINMAX	0002	032407	M	0002	032402	NFLOW	0002	032425	NPLOT
0002	032401	NREEF	0000	I 000000	NTID	0002	I 032403	NTIDE	0000	I 000001	NTIDP1

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0002 032373 OMEGA      0002 032374 PHI      0002 032456 PH11      0002 032462 PH12
0002 032466 PH13      0002 032372 PTIME      0002 020577 QINFLO      0002 007133 QXN
0002 011444 QYN        0002 032426 R          0002 022511 STATON      0002 032370 TCOUNT
0002 032376 THETA      0002 030643 THETA1      0002 030523 TI          0002 R 031677 TIDE1
0002 R 032013 TIDE2      0002 R 032127 TIDE3      0002 R 032243 TIDE4      0002 R 032473 TID1
0002 R 032474 TID2      0002 R 032475 TID3      0002 R 032476 TID4      0002 023731 TIM
0002 032367 TIME        0002 032406 TIMVEL      0002 032405 TMARK      0002 032371 TPER
0002 022631 UAPRT      0002 025423 UAPRTA      0002 022643 VAPRT      0002 027063 VAPRTA
0002 032375 W          0002 030763 W2          0002 032377 XW          0002 032400 YW
0002 002311 Z          0002 021621 ZB

```

```

00101 1*
00101 2* C
00101 3* C
00101 4* C
00101 5* C
00101 6* C
00101 7* C
00101 8*
00103 9*
00103 10*
00104 11*
00104 12*
00104 13*
00104 14*
00104 15*
00104 16*
00105 17*
00105 18*
00105 19*
00105 20*
00105 21*
00106 22*
00107 23*
00110 24*
00111 25*
00113 26*
00114 27*
00115 28*
00116 29*

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SUBROUTINE CALTID

THIS INTERPOLATION SUBROUTINE COMPUTES AT EVERY
TIME STEP THE APPROPRIATE VALUES OF EXCITING TIDES
AT THE OCEAN BOUNDARIES THAT ARE USED AS FORCING
FUNCTIONS IN THE COARSE GRID MODEL.

```

COMMON D(35,35),Z(35,35),HN(35,35),QXN(35,35),QYN(35,35),
1F(35,35),IFLAG(35,35)
COMMON QINFLO(60),IFLOW(60),JFLOW(60),CT(60),ITIDE(60),JTIDE(60),
GTIDE(60),CB(110),ZB(110),CELSID(110),IBAR(110),JBAR(110),
* STATON(2,20),IP(20),JP(20),UAPRT(10),VAPRT(10),HPRT(10),
* HPLT(26,20),HF(26),TIM(26),HPRTA(80,10),UAPRTA(80,10),
* VAPRTA(80,10),TI(80),THETA1(80),W2(80),G1(80),G41(80),
* G42(80),G43(80),IDTIDE(60),IDTIDE(60),TIDE1(76),TIDE2(76),TIDE3(76),
* TIDE4(76)
COMMON IMAX,JMAX,DS,G,GCDT04,GDT0DS,DI,DT2,TIME,TCOUNT,TPER,PTIME,
* OMEGA,PHI,W,THETA,XW,YW,NREEF,NFLOW,NTIDE,DT0DS,TMARK,
* TIMVEL,M,KOUTCD,KOUTPP,KINDAT,KINIGH,KOUTDA,KONETV,KONETF,
* KOTVEL,KODISP,INETFL,IPDATA,IONVEL,IONFLO,NPLOT,R,E,
* ISAVQH,IODISP,DT02DS,KO
COMMON CON1,CON2,AO(4),C1(4),C2(4),C3(4),PHI1(4),PHI2(4),PHI3(4)
COMMON LINMAX,TID1,TID2,TID3,TID4
CON1 = CON1+DT
IF (CON1.LT.60.0) GO TO 20
CON1 = DT2
CON2 = CON2 + 1.0
NTID = CON2
NTIDP1 = NTID + 1

```

HYD 0645
HYD 0638

*NEW
*NEW
*NEW
*NEW
*NEW
*NEW
*-3

HYD 0644*-4

HYD 0655
HYD 0656
HYD 0657

HYD 0659

00117	30*	DEL12 = (TIDE2(NTIDP1)-TIDE2(NTID))*DT/60.0			
00120	31*	DEL11 = (TIDE1(NTIDP1)-TIDE1(NTID))*DT/60.0			
00121	32*	DEL13 = (TIDE3(NTIDP1)-TIDE3(NTID))*DT/60.0			
00122	33*	DEL14=(TIDE4(NTIDP1)-TIDE4(NTID))*DT/60.0			
00123	34*	20 CONTINUE			
00124	35*	TID1 = TID1 + DEL11			
00125	36*	TID2 = TID2 + DEL12			
00126	37*	TID3 = TID3 + DEL13			
00127	38*	TID4=TID4+DEL14			
00130	39*	DO 10 KT = 1,NTIDE			
00133	40*	ID = IDTIDE(KT)			
00134	41*	GO TO (1,2,3,4) , ID			
00135	42*	1 GTIDE(KT)=TID1			
00136	43*	GO TO 10			
00137	44*	2 GTIDE(KT) = TID2			
00140	45*	GO TO 10			
00141	46*	3 GTIDE(KT) = TID3			
00142	47*	GO TO 10			
00143	48*	4 GTIDE(KT) = TID4			
00144	49*	10 CONTINUE			
00146	50*	RETURN			
00147	51*	END			

END OF UNIVAC 1108 FORTRAN V COMPILATION.	0	*DIAGNOSTIC* MESSAGE(S)		
CALTID	05 MAY 72	12:54:27	0	00067710
CALTID	05 MAY 72	12:54:27	1	00071166
CODE			0	00071216
RELOCATABLE				

			14	49	(DELETED)
			24	1	(DELETED)
			14	11	

			HYD 0672		
			HYD 0673		
			HYD 0674		
			HYD 0676**--1		
			HYD 0678		
			HYD 0680		
			HYD 0682		
			HYD 0683		
			HYD 0684		

05 FEB 73 12:06:36.149

Q1 FOR,* CALCQH,CALCQH
UNIVAC 1108 FORTRAN V LEVEL 2206 0023
THIS COMPILATION WAS DONE ON 05 FEB 73 AT 12:06:36

SUBROUTINE CALCQH ENTRY POINT 003145

STORAGE USED (BLOCK, NAME, LENGTH)

0001 *CODE 003160
0000 *DATA 000100
0002 *BLANK 032477
0003 ALL 007133
0004 MQ 010544
0005 MRQ 000003
0006 MQPI 002311

EXTERNAL REFERENCES (BLOCK, NAME)

0007	RICTP	0010	NERR2\$	0011	SQRT	0012	NEXP6\$	0013	NERR3\$
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STORAGE ASSIGNMENT FOR VARIABLES (BLOCK, TYPE, RELATIVE LOCATION, NAME)

0001	003123	100L	0001	001741	101L	0001	001753	102L	001765	103L
0001	002054	104L	0001	002060	105L	0001	002065	106L	002164	107L
0001	002170	108L	0001	002175	109L	0001	001767	110L	002041	111L
0001	002151	112L	0001	002067	113L	0001	002073	114L	001773	115L
0001	000032	120G	0001	002202	137L	0001	002230	138L	002256	139L
0001	002304	140L	0001	002345	141L	0001	002523	142L	002526	143L
0001	002733	144L	0001	002736	145L	0001	002437	160L	002450	161L
0001	002353	162L	0001	002621	163L	0001	002633	164L	002534	165L
0001	002537	166L	0001	002751	167L	0001	002745	168L	002662	169L
0001	002757	170L	0001	002742	171L	0001	000064	201L	000074	202L
0001	000076	203L	0001	000106	204L	0001	000115	205L	000127	206L
0001	000137	207L	0001	000141	208L	0001	000151	209L	000160	210L
0001	003066	250L	0001	000217	60L	0001	003072	603G	003060	70L
0001	000261	71L	0001	000413	72L	0001	000527	73L	000653	74L
0001	000777	75L	0001	001056	76L	0001	001072	77L	001117	78L
0001	001170	79L	0001	001202	80L	0001	001227	81L	001307	82L

0001 001323 83L 0001 001350 84L 0001 001427 85L 0001 001441 86L
0001 001466 87L 0001 001505 88L 0001 001517 89L 0001 001545 90L
0001 001557 91L 0001 001605 92L 0001 001633 93L 0001 001661 94L
0001 001711 95L 0001 002765 96L 0001 003017 97L 0001 003044 98L
0002 032436 AO 0002 R 021443 CB 0002 021777 CELSID 0000 R 000021 COEFX
0000 R 000025 COEFY 0002 032434 CON1 0002 032435 CON2 0002 R 021063 CT
0002 032442 C1 0002 032446 C2 0002 032452 C3 0002 R 000000 D
0000 R 000016 DBRX 0000 R 000026 DBX 0000 R 000027 DBY
0000 R 000017 DCN 0002 R 032361 DS 0002 R 032365 DT 0002 R 032404 DTODS
0002 R 032432 DTODS 0002 R 032366 DT2 0002 R 032427 E 0002 013755 F
0004 R 000000 FX 0004 R 002311 FY 0002 R 032362 G 0002 R 032363 GCDT04
0002 R 032364 GDTODS 0002 R 021347 GTIDE 0002 031103 G1 0002 031223 G41
0002 031343 G42 0002 031463 G43 0003 R 004622 H 0002 023677 HF
0000 R 000034 HMAX 0002 R 004622 HN 0002 022667 HPLT 0002 022655 HPRT
0002 023763 HPRTA 0000 I 000005 I 0002 022155 IBAR 0004 I 004624 ICLL
0002 031603 IDTIDE 0000 I 000007 IFL 0002 016266 IFLAG 0000 I 000010 IFLG
0002 020673 IFLOW 0002 032357 IMAX 0002 032421 INETFL 0000 I 000044 INJP\$
0002 032431 IODISP 0002 032424 IONFLO 0002 032423 IONVEL 0002 022561 IP
0002 032422 IPDATA 0002 032430 ISAVGH 0002 021157 ITIDE 0000 I 000006 J
0000 I 000011 JAFI 0002 022333 JBAR 0000 I 000012 JBFL 0004 I 006574 JCLL
0000 I 000030 JFI 0006 I 000000 JFLAG 0002 020767 JFLOW 0002 032360 JMAX
0002 022605 JP 0002 021253 JTIDE 0000 I 000001 KB 0002 032433 KO
0000 I 000002 KD 0002 032412 KINDAT 0002 032413 KINIGH 0002 032417 KOVEL
0002 032420 KODISP 0002 032416 KONETV 0002 032415 KONETV 0002 032411 KOUTPP
0004 I 004623 KOUNT 0002 032410 KOUTCD 0002 032414 KOUTDA 0002 032411 KOUTPP
0005 000001 KQCTP 0005 000002 KQFTP 0005 I 000000 KRISOFN 0000 I 000003 KT
0000 I 000032 KTT 0002 032472 LINMAX 0002 032407 M 0000 I 000004 N
0002 032402 NFLOW 0002 032425 NPLOT 0002 032401 NREEF 0002 032403 NTIDE
0002 R 032373 OMEGA 0002 032374 PHI 0002 032456 PHI1 0002 032462 PHI2
0002 032466 PHI3 0002 032372 PTIME 0000 R 000020 QBARY 0000 R 000024 QBARY
0000 R 000013 QDIFXS 0000 R 000014 QDIFYS 0002 R 020577 QINFLO 0003 R 000000 QX
0000 R 000022 QXBAR 0002 R 007133 QXN 0003 R 002311 QY 0000 R 000015 QYBAR
0002 R 011444 QYN 0002 R 032426 R 0000 R 000000 SIGN 0004 R 004622 SQTG
0002 022511 STATON 0002 032370 TCOUNT 0002 032376 THETA 0002 030643 THETA1
0002 030523 TI 0002 031677 TIDE1 0002 032013 TIDE2 0002 032127 TIDE3
0002 032243 TIDE4 0002 032473 TID1 0002 032474 TID2 0002 032475 TID3
0002 032476 TID4 0002 023731 TIM 0002 032367 TIME 0002 032406 TIMVEL
0002 032405 TMARK 0002 032371 TPER 0002 022631 UAPRT 0002 025423 UAPRTA
0002 022643 VAPRT 0002 027063 VAPRTA 0002 032375 W 0002 030763 W2
0002 R 032377 XW 0002 032400 YW 0002 R 002311 Z 0002 R 021621 ZB
0000 R 000031 ZMAX

LINE	CODE	TEXT	DATE	TIME	USER	STATUS
1*	C	SUBROUTINE CALCQH				
2*	C	THIS SUBROUTINE IS THE BASIC COMPUTATIONAL ELEMENT				
3*	C	OF THE TIDAL HYDRODYNAMIC MODEL.				
4*	C	ON THE TYPE OF BOUNDARY CONDITION REQUIRED BY A GIVEN				
5*	C	COMPUTATIONAL GRID CELL AS SPECIFIED BY ITS IDENTIFYING				
6*	C	FLAG VALUE, CONTROL IS TRANSFERRED TO THE APPROPRIATE				
7*	C	EQUATION FOR THE EXPLICIT DETERMINATION OF THE TIDAL				
8*	C	AMPLITUDE AND THE FLOWS PER UNIT WIDTH AT THE TOP AND				
9*	C	RIGHT-HAND SIDE OF THE CELL. CONTROL PASSES THROUGH				
10*	C	THIS SUBROUTINE DURING EACH TIME STEP OF THE SIMULATION.				
11*	C	FLOWS TO BE TRANSFERRED FROM THE COARSE GRID MODEL TO				
12*	C	THE FINE GRID MODEL ARE COMPILED ON MAGNETIC TAPE.				
13*	C					
14*	C					
15*	C	COMMON D(35,35),Z(35,35),HN(35,35),QYN(35,35),				
16*	C	1F(35,35),IFLAG(35,35)				
17*	C	COMMON Q,NFLOW(60),JFLOW(60),CT(60),ITIDE(60),JTIDE(60),				
18*	C	GTIDE(60),CB(110),ZB(110),CELSID(110),IBAR(110),JBAR(110),				
19*	C	STATON(2,20),IP(20),JP(20),UAPRT(10),VAPRT(10),HPRT(10),				
20*	C	HPLT(26,20),HF(26),TIM(26),HPRTA(80,10),UAPRTA(80,10),				
21*	C	VAPRTA(80,10),TI(80),THETA1(80),W2(80),G1(80),G41(80),				
22*	C	G42(80),G43(80),IDTIDE(60),ITIDE(76),TIDE2(76),TIDE3(76),				
23*	C	TIDE4(76)				
24*	C	COMMON IMAX,JMAX,DS,G,GCDT04,GDT0DS,DT,DT2,TIME,TCOUNT,TPER,PTIME,				
25*	C	OMEGA,PHI,W,THETA,XW,YW,NREEF,NFLOW,NTIDE,DT0DS,TMARK,				
26*	C	TIMVEL,M,KOUTCD,KOUTPP,KINDAT,KINIGH,KOUTDA,KONETV,KONETF,				
27*	C	KOTVEL,KODISP,INETFL,IPDATA,IONVEL,IONFLO,NPLOT,R,E,				
28*	C	ISAVGH,IODISP,DT02DS,KO				
29*	C	COMMON CON1,CON2,AO(4),C1(4),C2(4),C3(4),PHI1(4),PHI2(4),PHI3(4)				
30*	C	COMMON LINMAX,TID1,TID2,TID3,TID4				
31*	C	COMMON/ALL/OX(35,35),QY(35,35),H(35,35)				
32*	C	COMMON/MQ/FX(35,35),FY(35,35),SQTG,KOUNT,ICLL(1000),JCLL(1000)				
33*	C	COMMON/MRG/KRSOFN,KQCTP,KQFTP				
34*	C	COMMON/MQPI/JFLAG(35,35)				
35*	C	KB=0				
36*	C	KD=0				
37*	C	KT=0				
38*	C	DO 70 N=1,KOUNT				
39*	C	I=ICLL(N)				
40*	C	J=JCLL(N)				
41*	C	IFL=IFLAG(I,J)				

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00125 42* IFLG = IFL
00126 43* JAFI=JFLAG(I,J)/10
00127 44* JBFL=JFLAG(I,J)-10*JAFI
00130 45* GO TO (201,202,203,204),JAFI
00131 46* 201 QDIFXS=(QX(I,J+1)-QX(I,J-1))/(DS*2.)
00132 47* GO TO 205
00133 48* 202 QDIFXS=0.
00134 49* GO TO 205
00135 50* 203 QDIFXS=(QX(I,J+1)-QX(I,J))/DS
00136 51* GO TO 205
00137 52* 204 QDIFXS=(QX(I,J)-QX(I,J-1))/DS
00140 53* 205 GO TO (206,207,208,209),JBFL
00141 54* 206 QDIFYS=(QY(I+1,J)-QY(I-1,J))/(2.*DS)
00142 55* GO TO 210
00143 56* 207 QDIFYS=0.
00144 57* GO TO 210
00145 58* 208 QDIFYS=(QY(I+1,J)-QY(I,J))/DS
00146 59* GO TO 210
00147 60* 209 QDIFYS=(QY(I,J)-QY(I-1,J))/DS
00150 61* 210 IF (IFL.GT.20) GO TO 60
00152 62* GO TO (70,71,72,73,74,75,76,77,78,79,80,81,82,83,84,85,86,98,
00152 63* * 87,88), IFL
00153 64* 60 IFL=IFL-20
00154 65* GO TO (89,90,91,92,93,94,95,101,102,103,104,105,106,107,
00154 66* * 108,109,137,138,139,140,141,142,143,144,145),IFL
00155 67* 71 QYBAR=0.25*(QY(I,J)+QY(I+1,J)+QY(I,J-1)+QY(I+1,J-1))
00156 68* DBARX=D(I,J)+D(I+1,J)
00157 69* DCON=2./DBARX
00160 70* QYBAR=QYBAR*DCON
00161 71* QBARX=SQR(X(I,J)*QX(I,J)*QX(I,J)*DCON*DCON+QYBAR*QYBAR)
00162 72* COEFX=1.+GCDT04*FX(I,J)*QBARX/DBARX**1.333-DCON*DT02DS*(QX(I-1,J)
00162 73* 1-QX(I+1,J))
00163 74* QXBAR=0.25*(QX(I,J)+QX(I,J+1)+QX(I-1,J)+QX(I-1,J+1))
00164 75* DBARY=D(I,J)+D(I,J+1)
00165 76* DCON=2./DBARY
00166 77* QXBAR=QXBAR*DCON
00167 78* QBARX=SQR(QXBAR*QXBAR+QY(I,J)*QY(I,J)*DCON*DCON)
00170 79* COEFY=1.+GCDT04*FY(I,J)*QBARX/DBARY**1.333-DCON*DT02DS*(QY(I,J-1)
00170 80* 1-QY(I,J+1))
00171 81* GO TO 96
00172 82* 72 KB = KB+1
00173 83* DBX = (H(I,J) + H(I+1,J)) * 0.5 -ZB(KB)
00174 84* DBARX = D(I,J) + D(I+1,J)
0002900*NEW
0003000*NEW
0003100*NEW
0003200*NEW
0003300*NEW
0003400*NEW
0003500*NEW
0003600*NEW
0003700*NEW
0003800*NEW
0003900*NEW
0004000*NEW
0004100*NEW
0004200*NEW
0004300*NEW
0004400*NEW
0004500*NEW
0004600*NEW
0004700*NEW
0004800*NEW
0004900*NEW
0005000*NEW
0005100*NEW
0005200*NEW
0005300*NEW
0005400*NEW
0005500*NEW
0005600*NEW
0005700*NEW
0005800*NEW
0005900*NEW
0006000*NEW
0006100*NEW
0006200*NEW
0006300*NEW
0006400*NEW
0006500*NEW
0006600*NEW
0006700*NEW
0006800*NEW
0006900*NEW
0007000*NEW
0007100*NEW
0007200*NEW
0007300*NEW
0007400*NEW
0007500*NEW
0007600*NEW

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00175      85*      QYBAR=0.25*(QY(I,J)+QY(I+1,J)+QY(I,J-1)+QY(I+1,J-1))
00176      86*      DCON=2./DBARX
00177      87*      QYBAR=QYBAR*DCON
00180      88*      COEFX = 1.0 +DT02DS*DBARX*ABS(QX(I,J))/(CB(KB)*DBX)**2
00200      89*      1-DCON*DT02DS*(QX(I-1,J)-QX(I+1,J))
00201      90*      KB = KB+1
00202      91*      DBY = (H(I,J) + H(I,J+1)) * 0.5 - ZB(KB)
00203      92*      QXBAR=0.25*(QX(I,J)+QX(I,J+1)+QX(I-1,J)+QX(I-1,J+1))
00204      93*      DBARY=D(I,J)+D(I,J+1)
00205      94*      DCON=2./DBARY
00206      95*      QXBAR=QXBAR*DCON
00207      96*      COEFY = 1.0 +DT02DS*DBARY*ABS(QY(I,J))/(CB(KB)*DBY)**2
00207      97*      1-DCON*DT02DS*(QY(I,J-1)-QY(I,J+1))
00210      98*      GO TO 96
00211      99*      73 QXBAR=0.25*(QX(I,J)+QX(I,J+1)+QX(I-1,J)+QX(I-1,J+1))
00212      100*      DBARY=D(I,J)+D(I,J+1)
00213      101*      DCON=2./DBARY
00214      102*      QXBAR=QXBAR*DCON
00215      103*      QBARY=SQRT(QXBAR*QXBAR+QY(I,J)*QY(I,J)*DCON*DCON)
00216      104*      COEFY=1.+GCDT04*FY(I,J)*QBARY/DBARY**1.333-DCON*DT02DS*(QY(I,J-1)
00216      105*      1-QY(I,J+1))
00217      106*      KB = KB+1
00220      107*      DBX = (H(I,J) + H(I+1,J)) * 0.5 -ZB(KB)
00221      108*      QYBAR=0.25*(QY(I,J)+QY(I+1,J)+QY(I,J-1)+QY(I+1,J-1))
00222      109*      DBARX=D(I,J)+D(I+1,J)
00223      110*      DCON=2./DBARX
00224      111*      QYBAR=QYBAR*DCON
00225      112*      COEFX = 1.0 +DT02DS*DBARX*ABS(QX(I,J))/(CB(KB)*DBX)**2
00225      113*      1-DCON*DT02DS*(QX(I-1,J)-QX(I+1,J))
00226      114*      GO TO 96
00227      115*      74 QYBAR=0.25*(QY(I,J)+QY(I+1,J)+QY(I,J-1)+QY(I+1,J-1))
00230      116*      DBARX=D(I,J)+D(I+1,J)
00231      117*      DCON=2./DBARX
00232      118*      QYBAR=QYBAR*DCON
00233      119*      QBARX=SQRT(QX(I,J)*QX(I,J)+QX(I,J)*DCON*DCON+QYBAR*QYBAR)
00234      120*      COEFX=1.+GCDT04*FX(I,J)*QBARX/DBARX**1.333-DCON*DT02DS*(QX(I-1,J)
00234      121*      1-QX(I+1,J))
00235      122*      KB = KB+1
00236      123*      DBY = (H(I,J) + H(I,J+1)) * 0.5 - ZB(KB)
00237      124*      QXBAR=0.25*(QX(I,J)+QX(I,J+1)+QX(I-1,J)+QX(I-1,J+1))
00240      125*      DBARY=D(I,J)+D(I,J+1)
00241      126*      DCON=2./DBARY
00242      127*      QXBAR=QXBAR*DCON

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*NEW
00008200*NEW
*NEW
00008300*NEW
00008400*NEW
00008500*NEW
00008600*NEW
*NEW
00009200*NEW
00009300*NEW
*NEW
00009400*NEW
00009500*NEW
00009600*NEW
*NEW
00010200*NEW
00010300*NEW
*NEW
00010400*NEW
00010500*NEW
00010600*NEW
00010700*NEW
00010800*NEW
*NEW
00011400*NEW
00011500*NEW
*NEW
00011600*NEW
00011700*NEW
00011800*NEW
*NEW
00012400*NEW
00012500*NEW
*NEW
00012600*NEW
00012700*NEW
00012800*NEW
00012900*NEW
00013000*NEW
*NEW
00013600*NEW
00013700*NEW
*NEW

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00013800*NEW
00013900*NEW
00014000*NEW
00014600*NEW
00014700*NEW
00014800*NEW
00014900*NEW
00015000*NEW
00015100*NEW
00015200*NEW
00015300*NEW
00015400*NEW
00015500*NEW
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00016900*NEW
00017000*NEW
00017100*NEW
00017200*NEW
00017300*NEW
00017400*NEW
00017500*NEW
00017600*NEW
00018200*NEW
00018300*NEW
00018400*NEW
00018500*NEW
00018600*NEW
00018700*NEW
00018800*NEW
00018900*NEW

00243 COEFY = 1.0 +DT02DS*DBARY*ABS(QY(I,J))/(CB(KB)*DBY)**2
00243 1-DCON*DT02DS*(QY(I,J-1)-QY(I,J+1))
00244 GO TO 96
00245 75 QXBAR=0.25*(QX(I,J)+QX(I,J+1)+QX(I-1,J)+QX(I-1,J+1))
00246 DBARY=D(I,J)+D(I,J+1)
00247 DCON=2./DBARY
00250 QXBAR=QXBAR*DCON
00251 QBARX=SORT(QXBAR*QXBAR+QY(I,J)*QY(I,J)*DCON*DCON)
00252 COEFY=1.+GCDT04*FY(I,J)*QBARX/DRARY**1.333-DCON*DT02DS*(QY(I,J-1)
00253 1-QY(I,J+1))
00254 GO TO 97
00255 76 KD = KD + 1
00256 QXN(I,J) = QINFLO(KD)
00257 JFL=1
00260 GO TO 114
00261 77 KT = KT + 1
00262 QXN(I,J) = -CT(KT)*SORT(G*D(I,J))*(GTIDE(KT)-H(I,J))
00263 GO TO 75
00264 78 KB = KB+1
00265 DBY = (H(I,J) + H(I,J+1)) * 0.5 - ZB(KB)
00266 QXBAR=0.25*(QX(I,J)+QX(I,J+1)+QX(I-1,J)+QX(I-1,J+1))
00267 DBARY=D(I,J)+D(I,J+1)
00270 DCON=2./DBARY
00271 QXBAR=QXBAR*DCON
00271 COEFY = 1.0 +DT02DS*DBARY*ABS(QY(I,J))/(CB(KB)*DBY)**2
00271 1-DCON*DT02DS*(QY(I,J-1)-QY(I,J+1))
00272 GO TO 97
00273 79 KD = KD+1
00274 QXN(I,J) = QINFLO(KD)
00275 GO TO 78
00276 80 KT = KT+1
00277 QXN(I,J) = -CT(KT)*SORT(G*D(I,J))*(GTIDE(KT)-H(I,J))
00300 GO TO 78
00301 81 QYBAR=0.25*(QY(I,J)+QY(I,J+1)+QY(I-1,J)+QY(I-1,J-1))
00302 DBARX=D(I,J)+D(I+1,J)
00303 DCON=2./DBARX
00304 QYBAR=QYBAR*DCON
00305 QBARX=SORT(QX(I,J)*QX(I,J)*DCON*DCON+QYBAR*QYBAR)
00306 COEFX=1.+GCDT04*FX(I,J)*QBARX/DRARX**1.333-DCON*DT02DS*(QX(I-1,J)
00306 1-QX(I+1,J))
00307 GO TO 96
00310 82 KD = KD+1
00311 QYN(I,J) = QINFLO(KD)

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00312 171*
00313 172*
00314 173*
00315 174*
00316 175*
00317 176*
00320 177*
00321 178*
00322 179*
00323 180*
00324 181*
00325 182*
00326 183*
00330 184*
00331 185*
00332 186*
00333 187*
00334 188*
00335 189*
00336 190*
00337 191*
00340 192*
00341 193*
00342 194*
00343 195*
00344 196*
00345 197*
00346 198*
00347 199*
00350 200*
00351 201*
00352 202*
00353 203*
00354 204*
00355 205*
00356 206*
00357 207*
00360 208*
00361 209*
00362 210*
00363 211*
00364 212*
00365 213*

JFL=1
GO TO 115
83 KT = KT+1
QYN(I,J) = -CT(KT)*SQRT(G*D(I,J))*(GTIDE(KT)-H(I,J))
GO TO 81
84 KB = KB+1
DBX = (H(I,J) + H(I+1,J)) * 0.5 -ZB(KB)
QYBAR=0.25*(QY(I,J)+QY(I+1,J)+QY(I,J-1)+QY(I+1,J-1))
DBARX=D(I,J)+D(I+1,J)
DCON=2./DBARX
QYBAR=QYBAR*DCON
COEFX = 1.0 +DT02DS*DBARX*ABS(QX(I,J))/(CB(KB)*DBX)**2
1-DCON*DT02DS*(QX(I-1,J)-QX(I+1,J))
IF (IFLG.EQ.45)KB=KB+1
GO TO 96
85 KD = KD+1
QYN(I,J) = QINFLO(KD)
GO TO 84
86 KT = KT+1
QYN(I,J) = -CT(KT)*SQRT(G*D(I,J))*(GTIDE(KT)-H(I,J))
GO TO 84
87 KD = KD+1
QXN(I,J) = QINFLO(KD)
KD = KD+1
QYN(I,J) = QINFLO(KD)
GO TO 98
88 KD = KD+1
QYN(I,J) = QINFLO(KD)
GO TO 98
89 KT = KT+1
QXN(I,J) = -CT(KT)*SQRT(G*D(I,J))*(GTIDE(KT)-H(I,J))
GO TO 88
90 KD = KD+1
QXN(I,J) = QINFLO(KD)
GO TO 98
91 KT = KT+1
QYN(I,J) = -CT(KT)*SQRT(G*D(I,J))*(GTIDE(KT)-H(I,J))
GO TO 90
92 KT = KT+1
QYN(I,J) = -CT(KT)*SQRT(G*D(I,J))*(GTIDE(KT)-H(I,J))
GO TO 98
93 KT = KT+1
QXN(I,J) = -CT(KT)*SQRT(G*D(I,J))*(GTIDE(KT)-H(I,J))
00019000*NEW
00019100*NEW
00019200*NEW
00019300*NEW
00019400*NEW
00019500*NEW
00019600*NEW
00020200*NEW
00020300*NEW
00020400*NEW
00020500*NEW
00020600*NEW
00020700*NEW
00020800*NEW
00020900*NEW
00021000*NEW
00021100*NEW
00021200*NEW
00021300*NEW
00021400*NEW
00021500*NEW
00021600*NEW
00021700*NEW
00021800*NEW
00021900*NEW
00022000*NEW
00022100*NEW
00022200*NEW
00022300*NEW
00022400*NEW
00022500*NEW
00022600*NEW
00022700*NEW
00022800*NEW
00022900*NEW
00023000*NEW
00023100*NEW
00023200*NEW
00023300*NEW
00023400*NEW

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00365 214*
00366 215*
00367 216*
00370 217*
00371 218*
00372 219*
00373 220*
00374 221*
00375 222*
00376 223*
00377 224*
00400 225*
00401 226*
00402 227*
00403 228*
00404 229*
00405 230*
00406 231*
00407 232*
00411 233*
00412 234*
00413 235*
00414 236*
00415 237*
00416 238*
00417 239*
00420 240*
00421 241*
00422 242*
00423 243*
00424 244*
00425 245*
00427 246*
00430 247*
00432 248*
00433 249*
00434 250*
00435 251*
00436 252*
00437 253*
00440 254*
00441 255*
00442 256*

94 GO TO 98
KT = KT+1
QYN(I,J) = CT(KT)*SQRT(G*D(I,J+1))*(GTIDE(KT)-H(I,J+1))
HN(I,J) = GTIDE(KT)
GO TO 70
95 KT = KT+1
QXN(I,J) = CT(KT)*SQRT(G*D(I+1,J))*(GTIDE(KT)-H(I+1,J))
HN(I,J) = GTIDE(KT)
GO TO 70
101 KD = KD+1
QXN(I,J) = QINFLO(KD)
GO TO 70
102 KD=KD+1
QYN(I,J) = QINFLO(KD)
GO TO 70
103 JFL = 1
110 QYN(I,J) = 0.0
115 ZMAX=AMAX1(Z(I,J),Z(I+1,J))
IF (H(I,J).GT.ZMAX.OR.H(I+1,J).GT.ZMAX) GO TO 111
QXN(I,J) = 0.0
GO TO (98,75,78,70,106), JFL
111 GO TO (81,71,74,70,113), JFL
104 JFL = 2
IFLG = 2
GO TO 110
105 JFL = 3
IFLG = 2
GO TO 110
106 JFL = 1
113 QXN(I,J) = 0.0
114 ZMAX=AMAX1(Z(I,J),Z(I,J+1))
IF (H(I,J).GT.ZMAX.OR.H(I,J+1).GT.ZMAX) GO TO 112
QYN(I,J) = 0.0
IF (JFL.GT.1) IFLG = IFLAG(I,J)
GO TO (98,81,84,70,81), JFL
112 GO TO (75,71,73,70,71), JFL
107 JFL = 2
IFLG = 2
GO TO 113
108 JFL = 3
IFLG = 2
GO TO 113
109 JFL = 5

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00023500*NEW
00023600*NEW
00023700*NEW
00023800*NEW
00023900*NEW
00024000*NEW
00024100*NEW
00024200*NEW
00024300*NEW
00024400*NEW
00024500*NEW
00024600*NEW
00024700*NEW
00024800*NEW
00024900*NEW
00025000*NEW
00025100*NEW
00025200*NEW
00025300*NEW
00025400*NEW
00025500*NEW
00025600*NEW
00025700*NEW
00025800*NEW
00025900*NEW
00026000*NEW
00026100*NEW
00026200*NEW
00026300*NEW
00026400*NEW
00026500*NEW
00026600*NEW
00026700*NEW
00026800*NEW
00026900*NEW
00027000*NEW
00027100*NEW
00027200*NEW
00027300*NEW
00027400*NEW
00027500*NEW
00027600*NEW
00027700*NEW

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000443 257* IFLG = 2
000444 258* GO TO 110
000445 259* KTT = KT+1
000446 260* IF (GTIDE(KTT).GT.Z(I,J)) GO TO 77
000450 261* KT=KT+1
000451 262* QXN(I,J) = 0.0
000452 263* GO TO 75
000453 264* KTT = KT+1
000454 265* IF (GTIDE(KTT).GT.Z(I,J)) GO TO 93
000456 266* KI=KT+1
000457 267* QXN(I,J) = 0.0
000460 268* GO TO 98
000461 269* KTT = KT+1
000462 270* IF (GTIDE(KTT).GT.Z(I+1,J)) GO TO 95
000464 271* KI=KT+1
000465 272* QXN(I,J) = 0.0
000466 273* GO TO 70
000467 274* KBT=KB+1
000470 275* IFLG=3
000471 276* IF (H(I,J).GT.ZB(KBT).OR.H(I+1,J).GT.ZB(KBT))GO TO 72
000473 277* QXN(I,J)=0.
000474 278* KB=KB+1
000475 279* GO TO 78
000476 280* JFL=2
000477 281* QYN(I,J)=0.
000500 282* KBT=KB+1
000501 283* IF (H(I,J).GT.ZB(KBT).AND.H(I+1,J).GT.ZB(KBT))GO TO 160
000503 284* HMAX=AMAX1(H(I,J),H(I+1,J))
000504 285* IF (HMAX.GT.ZB(KBT))GO TO 161
000506 286* KB=KB+1
000507 287* QXN(I,J)=0.
000510 288* GO TO (106,98,171),JFL
000511 289* 160 GO TO (108,84,168),JFL
000512 290* 161 KB=KB+1
000513 291* DBX=HMAX-ZB(KB)
000514 292* SIGN=1.0
000515 293* IF (H(I+1,J).GT.ZB(KB))SIGN=-1.0
000517 294* QXN(I,J)=SIGN*CB(KB)*DRX*SQTG*SQRT(DBX)
000520 295* GO TO (114,98,171),JFL
000521 296* 142 JFL=1
000522 297* GO TO 162
000523 298* 143 JFL=2
000524 299* QXN(I,J)=0.
00027800*NEW
00027900*NEW
00028000*NEW
00028100*NEW
00028200*NEW
00028300*NEW
00028400*NEW
00028500*NEW
00028600*NEW
00028700*NEW
00028800*NEW
00028900*NEW
00029000*NEW
00029100*NEW
00029200*NEW
00029300*NEW
00029400*NEW
00029500*NEW
00029600*NEW
00029700*NEW
00029800*NEW
00029900*NEW
00030000*NEW
00030100*NEW
00030200*NEW
00030300*NEW
00030400*NEW
00030500*NEW
00030600*NEW
00030700*NEW
00030800*NEW
00030900*NEW
00031000*NEW
00031100*NEW
00031200*NEW
00031300*NEW
00031400*NEW
00031500*NEW
00031600*NEW

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00525 300* 165 KBT=KB+1
00526 301* 166 IF(H(I,J).GT.ZB(KBT).AND.H(I,J+1).GT.ZB(KBT))GO TO 163
00530 302* HMAX=AMAX1(H(I,J),H(I,J+1))
00531 303* IF(HMAX.GT.ZB(KBT))GO TO 164
00533 304* KB=KB+1
00534 305* QYN(I,J)=0.
00535 306* GO TO (103,98,167,98),JFL
00536 307* 163 GO TO (105,78,72,78),JFL
00537 308* 164 KB=KB+1
00540 309* IF(IFLAG(I,J).NE.45.OR.JFL.EQ.4)GO TO 169
00542 310* KB=KB+1
00543 311* 169 DBY=HMAX-ZB(KB)
00544 312* SIGN=1.0
00545 313* IF(H(I,J+1).GT.ZB(KB))SIGN=-1.0
00547 314* QYN(I,J)=SIGN*CB(KB)*DRY*SQT6*SORT(DBY)
00550 315* GO TO (115,98,170,98),JFL
00551 316* 144 JFL=1
00552 317* GO TO 165
00553 318* 145 JFL=3
00554 319* IFLG=3
00555 320* GO TO 162
00556 321* 171 JFL=4
00557 322* GO TO 165
00560 323* 168 KBT=KB+2
00561 324* GO TO 166
00562 325* 167 KB=KB-1
00563 326* IFLG=45
00564 327* GO TO 84
00565 328* 170 KB=KB-2
00566 329* IFLG=45
00567 330* GO TO 84
00570 331* 96 QXN(I,J)=(QX(I,J)+GDTODS*DBARX*(H(I,J)-H(I+1,J))-DT*QYBAR*QDIFXS
00571 332* 1+DT2*DBARX*OMEGA*QYBAR+DT*XW)/COEFX
00573 333* IF (IFLG.GT.11) GO TO 98
00574 334* 97 QYN(I,J)=(QY(I,J)+GDTODS*DBARY*(H(I,J)-H(I+1,J))-DT*QXBAR*QDIFYS
00575 335* 1+DT2*DBARY*OMEGA*QXBAR+DT*YW)/COEFY
00576 336* 98 HN(I,J) = H(I,J)+DTONS*((QXN(I-1,J)-QXN(I,J))+
00577 337* * (QYN(I,J-1)-QYN(I,J)))+DT*(R-E)
00578 338* 70 CONTINUE
00579 339* IF(KRSOFN.NE.1)GO TO 250
00601 340* CALL RITCIP
00602 341* 250 DO 100 N=1,KOUNT
00605 342* I=ICLL(N)
00031700*NEW
00031900*NEW
00032000*NEW
00032100*NEW
00032400*NEW
00032600*NEW
00032800*NEW
00033300*NEW
00033400*NEW
00033500*NEW
00033600*NEW
00034100*NEW
00034300*NEW
00034500*NEW
00034600*NEW
00034700*NEW
00034800*NEW
00034900*NEW
00035000*NEW
00035100*NEW
HYD 0864-141
*NEW
*NEW
*NEW
*NEW

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05 FEB 73 12:06:42.801

DI FOR,* PRINTI,PRINTI
UNIVAC 1108 FORTRAN V LEVEL 2206 0023
THIS COMPILATION WAS DONE ON 05 FEB 73 AT 12:06:42

SUBROUTINE PRINTI ENTRY POINT 000512

STORAGE USED (BLOCK, NAME, LENGTH)

0001 *CODE 000525
0000 *DATA 000514
0002 *BLANK 032477
0003 ALL 007133
0004 MGPI 002311

EXTERNAL REFERENCES (BLOCK, NAME)

0005	NPRT\$	0006	NI02\$	0007	NI01\$	0010	NWDU\$	0011	NERR3\$
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STORAGE ASSIGNMENT FOR VARIABLES (BLOCK, TYPE, RELATIVE LOCATION, NAME)

0001	000043	122G	000071	142G	0000	000067	150F	000102	151F	
0000	000115	152F	000103	153L	0000	000201	154F	000212	155F	
0000	000230	156F	000247	157F	0000	000275	158F	000312	159F	
0001	000130	171G	000452	2055F	0001	000156	210G	000130	219F	
0000	000145	220F	000206	231G	0000	000434	240F	000445	242F	
0000	000333	260F	000244	260G	0000	000343	261F	000263	266G	
0000	000364	270F	000404	271F	0000	000410	273F	000375	276F	
0000	000401	277F	000276	277G	0000	000413	280F	000472	300L	
0000	000423	301F	000431	303F	0001	000316	314G	000331	320G	
0001	000342	327G	000355	336G	0001	000372	346G	000412	354G	
0001	000426	363G	000453	400G	0001	000461	405G	032436	A0	
0002	R 021443	CB	0002	R 021777	CELSID	0002	032434	CON1	032435	CON2
0002	R 021063	CT	0002	032442	C1	0002	032446	C2	032452	C3
0002	000000	D	0002	032361	DS	0002	032365	DT	032404	DT0DS
0002	032432	DT02DS	0002	032366	DT2	0002	R 032427	E	013755	F
0002	032362	G	0002	032363	GCDT04	0002	032364	GD10DS	021347	GTIDE
0002	031103	G1	0002	031223	G41	0002	031343	G42	031463	G43
0003	004622	H	0002	023677	HF	0002	004622	HN	022667	HPLT

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0002 022655 HPRT      0002 023763 HPRTA      0000 I 000063 I      0002 I 022155 IBAR
0002 I 031603 IDTIDE  0000 I 000000 IDUMY      0002 I 016266 IFLAG      0002 I 020673 IFLOW
0002 I 032357 IMAX    0002 032421 INETFL      0000 000460 INJP$      0002 032431 IODISP
0002 032424 IONFLO    0002 032423 IONVEL      0002 I 022561 IP        0002 I 032422 IPDATA
0002 032430 ISAVGH     0002 I 021157 ITIDE      0000 I 000064 J        0002 I 022333 JBAR
0004 I 000000 JFLAG    0002 I 020767 JFLOW      0000 I 000066 JK        0000 I 000066 JK
0002 I 032360 JMAX     0002 I 022605 JP        0002 I 021253 JTIDE      0002 032412 KINDAT
0002 032413 KINIGH     0002 032433 KO        0002 032420 KODISP      0002 032416 KONETF
0002 032415 KONETV     0002 032417 KOTVEL      0002 032410 KOUTCD      0002 032414 KOUTDA
0002 032411 KOUTPP     0000 I 000062 L        0002 032472 LINMAX      0002 032407 M
0002 I 032402 NFLOW    0002 I 032425 NPLOT      0002 I 032401 NREEF      0002 I 032403 NTIDE
0002 R 032373 OMEGA    0002 R 032374 PHI        0002 032456 PHI1      0002 032462 PHI2
0002 032466 PHI3      0002 032372 PTIME      0002 R 020577 QINFLO      0003 000000 QX
0002 007133 QXN        0003 002311 QY        0002 011444 QYN        0002 R 032426 R
0002 R 022511 STATON   0002 032370 TCOUNT      0002 R 032376 THETA      0002 030643 THETA1
0002 030523 TI         0002 031677 TIDE1      0002 032013 TIDE2      0002 032127 TIDE3
0002 032243 TIDE4     0002 032473 TID1      0002 032474 TID2      0002 032475 TID3
0002 032476 TID4     0002 023731 TIM        0002 032367 TIME      0002 032406 TIMVEL
0002 032405 TMARK     0002 032371 TPER      0002 022631 UAPRT      0002 025423 UAPRTA
0002 022643 VAPRT     0002 027063 VAPRTA      0002 R 032375 W        0002 030763 W2
0002 032377 XW        0002 032400 YW        0002 R 002311 Z        0002 R 021621 ZB

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00101 1*
00101 2* C
00101 3* C
00101 4* C
00101 5* C
00101 6* C
00101 7* C
00101 8* C
00101 9* C
00101 10* C
00103 11*
00103 12*
00104 13*
00104 14*
00104 15*
00104 16*
00104 17*
00104 18*

SUBROUTINE PRINTI

      THIS SUBROUTINE PRINTS ALL DATA READ IN
      BY THE EXECUTIVE CONTROL ROUTINE, EXCEPT FOR THAT
      PREVIOUSLY PRINTED BY THAT ROUTINE. APPROPRIATE
      DESCRIPTIVE HEADINGS AND TITLES ARE PRINTED WITH THE
      DATA SO THAT MODEL USERS CAN CHECK TO SEE THAT ALL
      PROTOTYPE CONDITIONS ARE PROPERLY ACCOUNTED FOR IN
      THE MODEL.

      COMMON D(35,35),Z(35,35),HN(35,35),QXN(35,35),QYN(35,35),
1F(35,35),IFLAG(35,35)
      COMMON QINFLO(60),IFLOW(60),JFLOW(60),CT(60),ITIDE(60),JTIDE(60),
      GTIDE(60),CB(110),ZB(110),CELSID(110),IBAR(110),JBAR(110),
      STATON(2,20),IP(20),JP(20),UAPRT(10),VAPRT(10),HPRT(10),
      HPLI(26,20),HF(26),TIM(26),HPRTA(80,10),UAPRTA(80,10),
      VAPRTA(80,10),TI(80),THETA1(80),W2(80),G1(80),G41(80),
      G42(80),G43(80),IDTIDE(60),IDTIDE(60),TIDE1(76),TIDE2(76),TIDE3(76),

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HYD 0884
HYD 0874 *NEW
HYD 0877 *-1
HYD 0878
HYD 0879
HYD 0880
HYD 0881
HYD 0882
HYD 0883 *NEW
*NEW
*NEW
*-3

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00104 19* TIDE4(76)
00105 20* COMMON IMAX,JMAX,DS,G,GCDT04,GDT0DS,DI,DI2,TIME,TCOUNT,TPER,PTIME,HYD 0894
00105 21* OMEGA,PHI,W,THETA,XW,YW,NREEF,NFLOW,NTIDE,DTODS,TMARK, HYD 0895
00105 22* TIMVEL,M,KOUTCD,KOUTPP,KINDAT,KINQH,KOUTDA,KONETV,KONETF, HYD 0896
00105 23* KOTVEL,KODISP,INETFL,IPDATA,IONVEL,IONFLO,NPLOT,R,E,
00105 24* ISAVQH,IODISP,DT02DS,KO HYD 0898
00106 25* COMMON CON1,CON2,A0(4),C1(4),C2(4),C3(4),PHI1(4),PHI2(4),PHI3(4)
00107 26* COMMON LINMAX,TID1,TID2,TID3,TID4
00110 27* COMMON/ALL/QX(35,35),QY(35,35),H(35,35)
00111 28* COMMON/MQPI/JFLAG(35,35)
00112 29* DIMENSION IDUMY(50)
00113 30* PRINT 2055
00115 31* PRINT 150
00117 32* FORMAT(9X,53HSTATION LOCATIONS FOR TIME PRINT-OUT OF HYDRODYNAMICSHYD 0904
00117 33* ,//) HYD 0905
00120 34* PRINT 151,(L,STATON(1,L),STATON(2,L),IP(L),JP(L),L=1,20) HYD 0907
00132 35* FORMAT(9X,15HSTATION NUMBER ,12,5X,A4,A4,5X,4HI = ,12,5X,4HJ = , HYD 0908
00132 36* *12,/) HYD 0909
00133 37* IF(NPLOT.EQ.0160 TO 153) HYD 0910
00135 38* PRINT 152 HYD 0911
00137 39* FORMAT(///,9X,49HSTATION LOCATIONS FOR TIME PLOTS OF HYDRODYNAMICSHYD 0912
00137 40* ,//) HYD 0913
00140 41* PRINT 151,(L,STATON(1,L),STATON(2,L),IP(L),JP(L),L=1,NPLOT) HYD 0914
00152 42* PRINT 219 HYD 0915
00154 43* 219 FORMAT(///,9X,58HINITIAL WIND CONDITIONS AND RAINFALL AND EVAPORAHYD 0916
00154 44* *TION RATES,/) HYD 0917
00155 45* PRINT 220, W,THETA,R,E HYD 0918
00163 46* 220 FORMAT(9X,16HWIND VELOCITY = ,F5.1,6H KNOTS,/,9X,13HWIND ANGLE =HYD 0919
00163 47* * ,F5.1,8H DEGREES,/,9X,16HRAINFALL RATE = ,F5.3,8H IN./DAY,/, H
00163 48* *9X,19HEVAPORATION RATE = ,F5.3,8H IN./DAY)
00164 49* PRINT 154 HYD 0920
00166 50* FORMAT(///,9X,38HEXTERNAL FLOW LOCATIONS AND QUANTITIES,/) HYD 0923
00167 51* PRINT 155,(I,IFLOW(I),JFLOW(I),GINFLO(I),I=1,NFLOW) HYD 0924
00200 52* FORMAT(9X,14HINFLOW NUMBER ,12,5X,4HI = ,12,5X,4HJ = ,12,5X,9HQINHYD 0925
00200 53* *FLO = ,F7.1,4H CFS,/) HYD 0926
00201 54* PRINT 2055 HYD 0927
00203 55* PRINT 156 HYD 0928
00205 56* FORMAT(///,9X,71HSUBMERGED BARRIER LOCATIONS, DISCHARGE COEFFICIENHYD 0929
00205 57* ,TS, AND MSL ELEVATIONS,/) HYD 0930
00206 58* PRINT 157,(I,IIBAR(I),JBAR(I),CELSID(I),CB(I),ZB(I),I=1,NREEF) HYD 0931
00221 59* FORMAT(9X,12HBARRIER NO. ,13,4X,4HI = ,12,4X,4HJ = ,12,4X,A4,1X, *NEW
00221 60* *8HBOUNDARY,4X,14HCOEFFICIENT = ,F4.2,4X,12HELEVATION = ,F5.1,5H FE *NEW
00221 61* *ET,/) *NEW

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LINE	CODE	TEXT	UNIT
62*	00222	PRINT 2055	HYD 0936**--3
63*	00224	PRINT 158	HYD 0937
64*	00226	FORMAT (///,9X,59H GULF TIDAL DISCHARGE COEFFICIENTS AND CELL TIDE	HYD 0938
65*	00226	* ASSIGNMENTS,///)	HYD 0939
66*	00227	PRINT 159, (I, ITIDE(I), JTIDE(I), CT(I), IDTIDE(I), I=1, NTIDE)	HYD 0940
67*	00241	FORMAT(9X,11HTIDAL CELL, I2,5X,4HI = ,I2,5X,4HJ = ,I2,5X,14HC	HYD 0941
68*	00241	.CIENT = ,F4,2,5X,11HTIDE = TIDE,I1,//)	HYD 0942
69*	00242	PRINT 260	HYD 0943
70*	00242	260 FORMAT (///,9X,30H DATA FOR CORIOLIS ACCELERATION,///)	HYD 0944
71*	00245	PRINT 261, OMEGA, PHI	HYD 0945
72*	00251	261 FORMAT (9X,28H ANGULAR ROTATION OF EARTH = ,F9.7,10H RAD./SEC.,///,	HYD 0946
73*	00251	*9X,18H LATITUDE OF BAY = ,F5.2,8H DEGREES,//)	HYD 0947
74*	00252	PRINT 2055	HYD 0948
75*	00254	PRINT 270	HYD 0949
76*	00256	270 FORMAT (9X,42H MEAN SEA LEVEL WATER DEPTHS THROUGHOUT BAY,///)	HYD 0950
77*	00257	DO 275 J=1,JMAX	
78*	00262	JJ = JMAX-J+1	
79*	00263	PRINT 276, JJ, (Z(I,JJ), I=1,IMAX)	
80*	00272	275 CONTINUE	
81*	00274	276 FORMAT (3X,I2,2X,I5(1X,F5.1))	
82*	00275	PRINT 277, (I, I=1,IMAX)	
83*	00303	277 FORMAT (/,2X,3HJ/I,15I6)	
84*	00304	271 FORMAT (/,2X,3HJ/I,1X,4I13)	
85*	00305	273 FORMAT (3X,I2,1X,4I13)	
86*	00306	PRINT 2055	
87*	00310	PRINT 280	HYD 0958
88*	00312	280 FORMAT (9X,34H COMPUTATIONAL CELL IDENTIFICATIONS,///)	HYD 0959
89*	00313	DO 282 J=1,JMAX	HYD 0960
90*	00316	JJ = JMAX-J+1	
91*	00317	DO 284 I=1,IMAX	
92*	00322	284 IDUMY(I) = IFLAG(I,JJ)	
93*	00324	282 PRINT 273,JJ, (IDUMY(I),I=1,IMAX)	
94*	00334	PRINT 271, (I,I=1,IMAX)	
95*	00342	WRITE(6,301)	
96*	00344	301 FORMAT(1H1,9X,19H CONVECTION FLAGGING,///)	
97*	00345	DO 302 J=1,JMAX	
98*	00350	JK=JMAX-J+1	
99*	00351	302 WRITE(6,303)JK, (JFLAG(I,JK),I=1,IMAX)	
100*	00361	WRITE(6,271)(I,I=1,IMAX)	
101*	00367	303 FORMAT(3X,I2,1X,4I13)	
102*	00370	PRINT 2055	
103*	00372	IF(IPDATA.EQ.3)GO TO 300	HYD 0965
104*	00374	PRINT 240	HYD 0967

00376	105*	240	FORMAT (/9X,39HMANNINGS N BOTTOM FRICTION COEFFICIENTS,//)	HYD	0968
00377	106*		DO 241 J=1,JMAX	HYD	0969
00402	107*	241	PRINT 242,J,(F(I,J),I=1,IMAX)	HYD	0970
00412	108*	242	FORMAT (/9X,4HJ = ,I2,/, (9X,10F8.5))	HYD	0971
00413	109*	300	CONTINUE	HYD	0972
00414	110*	2055	FORMAT (IH1)	HYD	0973
00415	111*		RETURN	HYD	0974
00416	112*		END	HYD	0975

END OF UNIVAC 1108 FORTRAN V COMPILATION.	0	*DIAGNOSTIC* MESSAGE(S)	
PRINTI	05	MAY 72	12:54:33
PRINTI	05	MAY 72	12:54:33

SYMBOLIC	0	00100660	14	102	(DELETED)
RELOCATABLE	1	00103504	24	1	(DELETED)
	0	00103534	14	57	

05 FEB 73 12:06:44.706

QI FOR,* PRINTO,PRINTO
UNIVAC 1108 FORTRAN V LEVEL 2206 0023
THIS COMPILATION WAS DONE ON 05 FEB 73 AT 12:06:44

SUBROUTINE PRINTO ENTRY POINT 000706
PRINT ENTRY POINT 000711
SAVEQH ENTRY POINT 000714

PRT11 ENTRY POINT 000717

STORAGE USED (BLOCK, NAME, LENGTH)

0001 *CODE 000722
0000 *DATA 000204
0002 *BLANK 032477
0003 ALL 007133
0004 PUN 004622

EXTERNAL REFERENCES (BLOCK, NAME)

0005	NPRT\$	0006	NIO2\$	0007	NIO1\$	0010	NREW\$	0011	NERR2\$
0012	NWDC\$	0013	NWBU\$	0014	NERR3\$				

STORAGE ASSIGNMENT FOR VARIABLES (BLOCK, TYPE, RELATIVE LOCATION, NAME)

0001	000316	1L	0000	000130	110F	000132	111F	0001	000436	115L
0001	000517	12L	0000	000107	1205F	000016	124G	0001	000016	126G
0001	000047	142G	0000	000031	16F	000121	164G	0001	000133	174G
0001	000370	2L	0000	000135	202F	000134	203F	0001	000145	204G
0000	000030	2055F	0001	000157	213G	000535	22L	0001	000216	237G
0001	000331	264G	0001	000335	270G	000347	277G	0001	000353	303G
0001	000406	316G	0001	000407	320G	000424	327G	0001	000425	331G
0001	000453	343G	0001	000467	355G	000501	365G	0000	000056	40F
0001	000531	402G	0001	000531	404G	000066	41F	0000	000101	410F
0000	000074	411F	0001	000554	416G	000567	425G	0001	000602	434G
0001	000022	44L	0001	000614	443G	032436	A0	0002	021443	CH

00101	1*		SUBROUTINE PRINTO		HYD 0988
00101	2*	C			HYD 0976
00101	3*	C		*NEW	
00101	4*	C	THIS SUBROUTINE OUTPUTS THE VALUES OF TIDAL		HYD 0979***-1
00101	5*	C	AMPLITUDES AND FLOWS PER UNIT WIDTH AT SPECIFIED TIME		HYD 0980
00101	6*	C	INTERVALS FOR TWENTY PRESPECIFIED GRID CELLS LOCATED		HYD 0981
00101	7*	C	IN THE SYSTEM. IF FINAL COMPUTED VALUES OF TIDAL		HYD 0982
00101	8*	C	AMPLITUDES AND FLOWS PER UNIT WIDTH FOR ALL GRID		
00101		C	ELEMENTS ARE DESIRED FOR A RESTART CAPABILITY AT THE		*NEW

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00101 9*
00101 10*
00101 11*
00101 12*
00103 13*
00103 14*
00104 15*
00104 16*
00104 17*
00104 18*
00104 19*
00104 20*
00104 21*
00104 22*
00105 23*
00105 24*
00105 25*
00105 26*
00106 27*
00107 28*
00110 29*
00111 30*
00112 31*
00113 32*
00115 33*
00116 34*
00117 35*
00121 36*
00122 37*
00133 38*
00133 39*
00134 40*
00135 41*
00136 42*
00137 43*
00140 44*
00141 45*
00144 46*
00145 47*
00146 48*
00147 49*
00150 50*
00151 51*

C
C
C
C

END OF THE SIMULATION PERIOD, CONTROL CAN BE TRANSFERRED
TO THIS SUBROUTINE WHERE THESE VALUES CAN BE OUTPUTTED
TO CARDS OR MAGNETIC TAPE.

COMMON D(35,35),Z(35,35),HN(35,35),QXN(35,35),QYN(35,35),
1F(35,35),IFLAG(35,35)
COMMON QINFLO(60),IFLOW(60),JFLOW(60),CT(60),ITIDE(60),JTIDE(60),
* GTIDE(60),CB(110),ZB(110),CELSID(110),IBAR(110),JBAR(110),
* STATON(2,20),IP(20),JP(20),UAPRT(10),VAPRT(10),HPRT(10),
* HPLT(26,20),HF(26),TIM(26),HPRTA(80,10),UAPRTA(80,10),
* VAPRTA(80,10),TI(80),THETA1(80),W2(80),G1(80),G41(80),
* G42(80),G43(80),IDTIDE(60),TIDE1(76),TIDE2(76),TIDE3(76),
* TIDE4(76)
COMMON IMAX,JMAX,DS,G,GCDT04,GDTODS,DT,DT2,TIME,TCOUNT,TPER,PTIME,
* OMEGA,PHI,W,THETA,XW,YW,NREEF,NFLOW,NTIDE,DTODS,TMARK,
* TIMVEL,M,KOUTCD,KOUTPP,KINDAT,KINIGH,KOUTDA,KONETV,KONETF,
* KOTVEL,KODISP,INETFL,IPDATA,IONVEL,IONFLO,NPLOT,R,E,
* ISAVGH,IODISP,DT02DS,KO
COMMON CON1,CON2,AO(4),C1(4),C2(4),C3(4),PHI1(4),PHI2(4),PHI3(4)
COMMON LINMAX,TID1,TID2,TID3,TID4
COMMON/ALL/OX(35,35),QY(35,35),H(35,35)
COMMON/PUN/UPLT(35,35),VPLT(35,35)
DIMENSION ZPRT(10)
IF (NLINE.NE.LINMAX) GO TO 44
ENTRY PRINTT
NLINE = 0
PRINT 2055
2055 FORMAT (1H1)
PRINT 16,((STATON(K,L), K=1,2), L=1,10)
16 FORMAT(3X,23HTIME SEA HYDRO- ,19X, 43HPRINTOUT STATIONS THR
*OUGHOUT SYSTEM ,/3X,22HHOURS TIDE DYNAMICS,2X,10(A4,A4))
44 NLINE = NLINE+1
KO=KO+1
TCOUNT = DT2
VTIMP = TIME/60.0
TI(KO)=TIMP
DO 38 K=1,10
K1 = IP(K)
K2 = JP(K)
HPRT(K) = H(K1,K2)
UAPRT(K) = OX(K1,K2)*DS/60.0
VAPRT(K) = QY(K1,K2)*DS/60.0
ZPRT(K) = Z(K1,K2)

HYD 0984***-1
HYD 0985
HYD 0986
HYD 0987
*NEW
*NEW
*NEW
***-3
*NEW
*NEW
*NEW
HYD 1002
HYD 1008
HYD 1009
HYD 1010
HYD 1011
HYD 1012
*NEW
***-1
HYD 1015
HYD 1016
HYD 1017
HYD 1018
HYD 1019
HYD 1020
HYD 1021
HYD 1022
HYD 1023
*NEW

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00152 52*
00153 53*
00154 54*
00155 55*
00156 56*
00160 57*
00170 58*
00171 59*
00200 60*
00201 61*
00210 62*
00217 63*
00220 64*
00221 65*
00222 66*
00227 67*
00227 68*
00230 69*
00231 70*
00232 71*
00233 72*
00234 73*
00235 74*
00236 75*
00241 76*
00242 77*
00243 78*
00244 79*
00245 80*
00246 81*
00247 82*
00250 83*
00251 84*
00252 85*
00253 86*
00254 87*
00256 88*
00257 89*
00260 90*
00262 91*
00263 92*
00266 93*
00275 94*

DXA = 0.5*(D(K1,K2)+D(K1+1,K2))*60.0
DYA = 0.5*(D(K1,K2)+D(K1,K2+1))*60.0
UPLT(KO,K) = QX(K1,K2)/DXA
VPLT(KO,K) = QY(K1,K2)/DYA

38 CONTINUE
PRINT 40, TIMP,TID1,(HPRT(K), K=1,10)
40 FORMAT (/,1X,F6.2,2X,F6.3,12H MSL TIDE ,10(F6.3,2X))
PRINT 41, TID2,(UAPRT(K), K=1,10)
41 FORMAT (9X,F6.3,2X,8HXFLO CFS,1X,10F8.0)
PRINT 410, TID3,(VAPRT(K), K=1,10)
PRINT 411, TID4,(ZPRT(K), K=1,10)
411 FORMAT (9X,F6.3,2X,8HGRD ELEV,10F8.2)
410 FORMAT (9X,F6.3,2X,8HYFLO CFS,1X,10F8.0)
THETAP = THETA*180.0/3.1416
PRINT 1205, TID4,W,THETAP
1205 FORMAT (9X,F6.3,2X,13HWIND SPEED = ,F5.1,6H KNOTS,10X,17HWIND DIREHYD 1035
*CTION = ,F6.1,22H DEGREES W.R.T. X-AXIS)
THETA1(KO) = THETAP
W2(KO)=W
G1(KO) = TID1
G41(KO) = TID2
G42(KO) = TID3
G43(KO) = TID4
DO 39 K=11,20
K1=IP(K)
K2=JP(K)
KTR=K-10
HPRTA(KO,KTR)=H(K1,K2)
UAPRTA(KO,KTR)=QX(K1,K2)*DS/60.0
VAPRTA(KO,KTR)=QY(K1,K2)*DS/60.0
ZPRT(KTR) = Z(K1,K2)
DXA=0.5*(D(K1,K2)+D(K1+1,K2))*60.
DYA=0.5*(D(K1,K2)+D(K1,K2+1))*60.
UPLT(KO,K) = QX(K1,K2)/DXA
VPLT(KO,K) = QY(K1,K2)/DYA
39 CONTINUE
RETURN
ENTRY SAVEQH
IF (ISAVQH.GT.1) REWIND KOUTDA
GO TO (1,2,1), ISAVQH
1 DO 108 J=1,JMAX
108 PUNCH 110, (H(I,J), I=1,IMAX)
110 FORMAT (8F10.5)
HYD 1026 **--1
HYD 1028
HYD 1033
HYD 1035
HYD 1036
HYD 1037
HYD 1038
HYD 1043
HYD 1044
HYD 1045
HYD 1046
HYD 1047
HYD 1050
HYD 1051
HYD 1052
HYD 1053
HYD 1054
HYD 1055
HYD 1056
HYD 1057

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00276 95* DO 109 J=1,JMAX
00301 96* 109 PUNCH 111, (QX(I,J),QY(I,J), I=1,IMAX)
00311 97* 111 FORMAT (8F10.4)
00312 98* 2 IF (ISAVGH.NE.3) GO TO 115
00314 99* 2 WRITE (KOUTDA) ((H(I,J), I=1,IMAX), J=1,JMAX)
00325 100* 2 WRITE (KOUTDA) ((QX(I,J),QY(I,J), I=1,IMAX), J=1,JMAX)
00337 101* 115 CONTINUE
00340 102* RETURN
00341 103* ENTRY PR11
00341 104* C FIRST CARDS VX, SECOND CARDS VY
00342 105* DO 201 K=1,20
00345 106* PUNCH 203, K
00350 107* 203 FORMAT (15)
00351 108* PUNCH 202, IP(K),JP(K),(UPLT(KK,K), KK=1,KO)
00361 109* PUNCH 202, IP(K),JP(K),(VPLT(KK,K), KK=1,KO)
00371 110* 202 FORMAT (2I4,18F4.1/,20F4.1)
00372 111* 201 CONTINUE
00374 112* K=1
00375 113* 12 NLINES = 0
00376 114* PRINT 2055
00400 115* PRINT 16,((STATON(N,L), N=1,2), L=11,20)
00411 116* 22 NLINES=NLINES+1
00412 117* PRINT 40,II(K),G1(K),(HPRTA(K,KTR),KTR=1,10)
00422 118* PRINT 41,G41(K),(UAPRTA(K,KTR),KTR=1,10)
00431 119* PRINT 410,G42(K),(VAPRTA(K,KTR),KTR=1,10)
00440 120* *DIAGNOSTIC* = IS AN IMPROPER PUNCTUATION MARK.
00447 121* PRINT 411, G43(K),(ZPRT(KTR), KTR=1=10)
00454 122* PRINT 1205,G43(K),W2(K),THETA1(K)
00456 123* IF (K.EQ.KO)RETURN
00457 124* K=K+1
00461 125* IF (NLINES.NE.LINMAX) GO TO 22
00462 126* GO TO 12
END

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END OF UNIVAC 1108 FORTRAN V COMPILATION. 1 *DIAGNOSTIC* MESSAGE(S)
PRINTO SYMBOLIC 05 MAY 72 12:54:35 0 00105172
PRINTO CODE RELOCATABLE 05 MAY 72 12:54:35 1 00110034

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HYD 1058
HYD 1060
HYD 1061
HYD 1062
HYD 1063
HYD 1064
HYD 1065
HYD 1066
HYD 1067
HYD 1068
HYD 1069
HYD 1070
HYD 1071
HYD 1072
HYD 1073
HYD 1074
HYD 1075
HYD 1076
HYD 1078
HYD 1079

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14 103 (DELETED)
36 1 (DELETED)
14 44

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05 FEB 73 12:06:46.983

QI FOR,* NETVGD,NETVGD
UNIVAC 1108 FORTRAN V LEVEL 2206 0023
THIS COMPILATION WAS DONE ON 05 FEB 73 AT 12:06:47

SUBROUTINE NETVGD ENTRY POINT 001212
NETFLO ENTRY POINT 001215
UVDXDY ENTRY POINT 001220
PVLDEP ENTRY POINT 001223
PFLDEP ENTRY POINT 001226
UVDOUT ENTRY POINT 001231
ZEROS ENTRY POINT 001234

STORAGE USED (BLOCK, NAME, LENGTH)

0001 *CODE 001237
0000 *DATA 003776
0002 *BLANK 032477
0003 ALL 007133

EXTERNAL REFERENCES (BLOCK, NAME)

0004	NPRT\$	0005	NI02\$	0006	NERR2\$	0007	NWDC\$	0010	NI01\$
0011	NWBU\$	0012	NERR3\$						

STORAGE ASSIGNMENT FOR VARIABLES (BLOCK, TYPE, RELATIVE LOCATION, NAME)

0001	000312	1L	0000	001740	108F	0001	000533	11L	000016	114G
0001	000017	117G	0001	000605	12L	0001	000114	140G	000115	143G
0001	000156	157G	0001	000157	162G	0001	000364	2L	001704	2055F
0001	000237	206G	0000	002035	208F	0001	001002	21L	002037	211F
0001	000242	211G	0001	001055	22L	0001	000325	235G	000331	241G
0001	000344	251G	0001	000350	255G	0001	000402	266G	000403	270G

0000	001765	28F	0001	000421	300G	0001	000422	302G	0001	000463	320G
0001	000466	323G	0001	000546	345G	0001	000552	351G	0001	001124	353L
0001	000565	361G	0001	000571	365G	0001	000623	376G	0001	000624	400G
0001	000642	410G	0001	000643	412G	0001	000710	430G	0001	000713	433G
0001	000432	453L	0001	001015	461G	0001	001021	465G	0001	001034	475G
0001	001040	501G	0001	001073	514G	0001	001074	516G	0001	001112	526G
0001	001113	530G	0001	001141	542G	0001	001142	545G	0000	002006	5505F
0000	001767	5506F	0001	000653	553L	0001	000203	555L	0001	000746	559L
0001	000076	665L	0001	000127	667L	0001	000051	668L	0000	001721	670F
0000	001705	675F	0000	001751	681F	0000	001742	685F	0002	032436	AO
0002	021443	CB	0002	021777	CELSID	0002	032434	CON1	0002	032435	CON2
0002	021063	CT	0002	032442	C1	0002	032446	C2	0002	032452	C3
0002	R 000000	D	0000	002041	DEPTH	0002	032361	DS	0002	R 032365	DT
0002	032404	DTODS	0002	032432	DTODS	0002	032366	DT2	0000	R 002041	DX
0000	R 001702	DXA	0000	002041	DY	0000	001703	DYA	0002	032427	E
0002	013755	F	0002	032362	G	0002	032363	GCDT04	0002	032364	GDTODS
0002	021347	GTIDE	0002	031103	G1	0002	031223	G41	0002	031343	G42
0002	031463	G43	0003	004622	H	0002	023677	HF	0002	004622	HN
0002	022667	HPLT	0002	022655	HPRT	0002	023763	HPRTA	0000	I 001701	I
0002	022155	IBAR	0002	031603	IDTIDE	0002	I 016266	IFLAG	0002	020673	IFLOW
0002	I 032357	IMAX	0002	I 032421	INETFL	0000	003745	INUP\$	0002	I 032431	IODISP
0002	I 032424	IONFLO	0002	I 032423	IONVEL	0002	022561	IP	0002	032422	IPDATA
0002	032430	ISAVGH	0002	021157	ITIDE	0000	I 001700	J	0002	022333	JBAR
0002	020767	JFLOW	0002	I 032360	JMAX	0002	022605	JP	0002	021253	JTIDE
0002	032412	KINDAT	0002	032413	KINIGH	0002	032433	KO	0002	I 032420	KODISP
0002	I 032416	KONETF	0002	I 032415	KONETV	0002	032417	KOTVEL	0002	032410	KOUTCD
0002	032414	KOUTDA	0002	032411	KOUTPP	0002	032472	LINMAX	0002	032407	M
0002	032402	NFLOW	0002	032425	NPLOT	0002	032401	NREEF	0002	032403	NTIDE
0002	032373	OMEGA	0002	032374	PHI	0002	032456	PHI1	0002	032462	PHI2
0002	032466	PHI3	0002	032372	PTIME	0002	020577	QINFLO	0000	R 002041	QNETX
0000	R 000000	QNETY	0003	R 000000	QX	0002	007133	QXN	0003	R 002311	QY
0002	011444	QYN	0002	032426	R	0002	022511	STATON	0002	032370	TCount
0002	032376	THETA	0002	030643	THETA1	0002	030523	TI	0002	031677	TIDE1
0002	032013	TIDE2	0002	032127	TIDE3	0002	032243	TIDE4	0002	032473	TID1
0002	032474	TID2	0002	032475	TID3	0002	032476	TID4	0002	032731	TIM
0002	032367	TIME	0002	032406	TIMVEL	0002	032405	TMARK	0002	R 032371	TPER
0002	022631	UAPRT	0002	025423	UAPRTA	0000	R 002041	UAVE	0002	022643	VAPRT
0002	027063	VAPRTA	0000	R 002041	VAVE	0000	R 002041	VNETX	0000	R 002041	VNETY
0002	032375	W	0002	030763	W2	0002	032377	XW	0002	032400	YW
0002	002311	Z	0002	021621	ZB						

LINE	CODE	TEXT	LINE	CODE	TEXT
00101	C	SUBROUTINE NETV0D	HYD	1088	
00101	C		HYD	1080	
00101	C	THIS IS A SUBROUTINE WHICH AT THE OPTION OF THE	HYD	1082	
00101	C	USER CALCULATES NET VELOCITIES AND FLOWS OVER A TIDAL	HYD	1083	
00101	C	CYCLE AND ALSO AVERAGE DEPTHS FOR ALL COMPUTATIONAL	HYD	1084	
00101	C	GRID ELEMENTS. THESE VALUES CAN BE OUTPUTTED TO CARDS	HYD	1085	
00101	C	OR MAGNETIC TAPE.	HYD	1086	
00101	C		HYD	1087	
00101	C				*NEW
00103		COMMON D(35,35),Z(35,35),HN(35,35),QXN(35,35),QYN(35,35),			*NEW
00103		IF(35,35),IFLAG(35,35)			**NEW
00104		COMMON GINFLO(60),IFLOW(60),JFLOW(60),CT(60),ITIDE(60),JTIDE(60),			**--3
00104		GTIDE(60),CB(110),ZB(110),CELSID(110),IBAR(110),JBAR(110),			
00104		* STATON(2,20),IP(20),JP(20),UAPRT(10),VAPRT(10),HPRT(10),			
00104		* HPLT(26,20),HF(26),TIM(26),HPRTA(80,10),UAPRTA(80,10),			
00104		* VAPRTA(80,10),TI(80),THETA1(80),W2(80),G1(80),G41(80),			
00104		* G42(80),G43(80),IDTIDE(60),TIDE1(76),TIDE2(76),TIDE3(76),			
00104		* TIDE4(76)			
00105		COMMON IMAX,JMAX,DS,G,6CDT04,6DTODS,DT,DT2,TIME,TCOUNT,TPER,PTIME,	HYD	1098	
00105		* OMEGA,PHI,W,THETA,XW,YW,NREEF,NFLOW,NTIDE,DTODS,TMARK,	HYD	1099	
00105		* TIMVEL,M,KOUTCD,KOUTPP,KINDAT,KINIQH,KOUTDA,KONETV,KONETF,	HYD	1100	
00105		* KOTVEL,KODISP,INETFL,IPDATA,IONVEL,IONFLO,NPLOT,R,E,			
00105		* ISAVQH,IODISP,DT02DS,KO	HYD	1102	
00106		COMMON CON1,CON2,AO(4),C1(4),C2(4),C3(4),PHI1(4),PHI2(4),PHI3(4)			
00107		COMMON LINMAX,TID1,TID2,TID3,TID4			
00110		COMMON/ALL/QX(35,35),QY(35,35),H(35,35)			*NEW
00111		DIMENSION QNETX(32,30),QNETY(32,30),VNETX(32,30),VNETY(32,30),			*NEW
00111		1DEPTH(32,30),UAVE(32,30),VAVE(32,30),DX(32,30),DY(32,30)			*NEW
00112		EQUIVALENCE (VNETX,VNETY,DEPTH,UAVE,VAVE,DX,DY,QNETX)			**--2
00113		DO 668 J=1,JMAX	HYD	1107	
00116		DO 668 I=1,IMAX	HYD	1108	
00121		IF (IFLAG(I,J).EQ.1) GO TO 668	HYD	1109	
00123		DXA=0.5*(D(I,J)+D(I+1,J))	HYD	1110	
00124		DYA=0.5*(D(I,J)+D(I,J+1))	HYD	1111	
00125		VNETX(I,J) = VNETX(I,J)+QX(I,J)/(60.0*DXA)	HYD	1112	
00126		VNETY(I,J) = VNETY(I,J)+QY(I,J)/(60.0*DYA)	HYD	1113	
00127		DEPTH(I,J) = DEPTH(I,J)+D(I,J)	HYD	1114	
00130		CONTINUE	HYD	1115	
00133		668 IF (IONFLO.GT.0.OR.INETFL.EQ.1) GO TO 665			
00135		RETURN	HYD	1117	
00136		ENTRY NETFLO	HYD	1118	
00137		DO 667 J=1,JMAX	HYD	1119	
00142		DO 667 I=1,IMAX	HYD	1120	

00145	43*	IF (IFLAG(I,J).EQ.1) GO TO 667	HYD 1121
00147	44*	GNEX(I,J) = GNEX(I,J)+QX(I,J)	HYD 1122
00150	45*	GNEX(I,J) = GNEX(I,J)+QY(I,J)	HYD 1123
00151	46*	667 CONTINUE	HYD 1124
00154	47*	RETURN	HYD 1132
00155	48*	ENTRY UVDOXY	HYD 1133
00156	49*	DO 555 J=1,JMAX	HYD 1134
00161	50*	DO 555 I=1,IMAX	HYD 1135
00164	51*	IF (IFLAG(I,J).EQ.1) GO TO 555	HYD 1136
00166	52*	DXA = 0.5*(D(I,J)+D(I+1,J))	HYD 1137
00167	53*	DYA = 0.5*(D(I,J)+D(I,J+1))	HYD 1138
00170	54*	UAVE(I,J) = UAVE(I,J)+ABS(QX(I,J))/DXA	HYD 1139
00171	55*	VAVE(I,J) = VAVE(I,J)+ABS(QY(I,J))/DYA	HYD 1140
00172	56*	555 CONTINUE	HYD 1141
00175	57*	RETURN	HYD 1142
00176	58*	ENTRY PVLDEP	HYD 1143
00177	59*	PRINT 2055	HYD 1144
00201	60*	2055 FORMAT (1H1)	HYD 1145
00202	61*	PRINT 675	HYD 1146
00204	62*	675 FORMAT (10X,54HNET VELOCITIES (FEET/SECOND) AND AVERAGE DEPTHS (FEHYD 1147
00204	63*	*ET),///)	HYD 1148
00205	64*	DO 669 J=1,JMAX	HYD 1149
00210	65*	DO 669 I=1,IMAX	HYD 1150
00213	66*	VNETX(I,J)=VNETX(I,J)*DT/TPER	HYD 1151
00214	67*	VNETY(I,J)=VNETY(I,J)*DT/TPER	HYD 1152
00215	68*	DEPTH(I,J) = DEPTH(I,J)*DT/TPER	HYD 1153
00216	69*	PRINT 670, I,J,VNETX(I,J),VNETY(I,J),DEPTH(I,J)	HYD 1154
00225	70*	670 FORMAT (10X,4H1 = ,I2,5X,4HJ = ,I2,5X,8HVNETX = ,F10.6,5X,	HYD 1155
00225	71*	* 8HVNETY = ,F10.6,5X,8HDEPTH = ,F6.3)	HYD 1156
00226	72*	669 CONTINUE	HYD 1157
00231	73*	IF (IONVEL.EQ.0) GO TO 453	HYD 1158
00233	74*	GO TO (1,2,1), IONVEL	HYD 1159
00234	75*	1 DO 109 J=1,JMAX	HYD 1160
00237	76*	109 PUNCH 108, (VNETX(I,J),VNETY(I,J), I=1,IMAX)	HYD 1161
00247	77*	108 FORMAT (8F10.6)	HYD 1162
00250	78*	DO 107 J=1,JMAX	HYD 1163
00253	79*	107 PUNCH 108, (DEPTH(I,J), I=1,IMAX)	HYD 1164
00262	80*	IF (IONVEL.NE.3) GO TO 453	HYD 1165
00264	81*	2 WRITE (KONETV) ((VNETX(I,J),VNETY(I,J), I=1,IMAX), J=1,JMAX)	HYD 1166
00276	82*	WRITE (KONETV) ((DEPTH(I,J), I=1,IMAX), J=1,JMAX)	HYD 1167
00307	83*	453 CONTINUE	HYD 1168
00310	84*	RETURN	HYD 1170
00311	85*	ENTRY PFLDEP	HYD 1171

```

00312 86*
00314 87*
00316 88*
00317 89*
00322 90*
00325 91*
00326 92*
00327 93*
00335 94*
00335 95*
00336 96*
00341 97*
00343 98*
00344 99*
00347 100*
00357 101*
00360 102*
00363 103*
00372 104*
00374 105*
00406 106*
00417 107*
00420 108*
00421 109*
00422 110*
00424 111*
00426 112*
00426 113*
00427 114*
00432 115*
00435 116*
00437 117*
00440 118*
00441 119*
00442 120*
00443 121*
00453 122*
00453 123*
00453 124*
00454 125*
00457 126*
00460 127*
00463 128*

PRINT 2055
PRINT 685
685 FORMAT (10X,29HNET FLOWS (CUBIC FEET/SECOND),///)
DO 680 J=1,JMAX
DO 680 I=1,IMAX
GNETX(I,J) = GNETX(I,J)*DS*DT/(60.0*TPER)
GNETY(I,J) = GNETY(I,J)*DS*DT/(60.0*TPER)
PRINT 681, I,J,GNETX(I,J),GNETY(I,J)
681 FORMAT (10X,4HI = ,I2,5X,4HJ = ,I2,5X,8HNETX = ,F12.2,5X,
*8HNETY = ,F12.2)
680 CONTINUE
IF (IONFLO.EQ.0) GO TO 553
GO TO (11,12,11), IONFLO
11 DO 27 J=1,JMAX
27 PUNCH 28, (GNETX(I,J),GNETY(I,J), I=1,IMAX)
28 FORMAT (8F10.3)
DO 29 J=1,JMAX
29 PUNCH 108, (DEPTH(I,J), I=1,IMAX)
IF (IONFLO.NE.3) GO TO 553
12 WRITE (KONET) ((GNETX(I,J),GNETY(I,J), I=1,IMAX), J=1,JMAX)
WRITE (KONET) ((DEPTH(I,J), I=1,IMAX), J=1,JMAX)
553 CONTINUE
RETURN
ENTRY UVDOUT
PRINT 2055
PRINT 5506
5506 FORMAT (5X, 74HAVERAGE VELOCITIES OVER A TIDAL CYCLE AND COMPUTED
*DISPERSION COEFFICIENTS,///)
DO 560 J=1,JMAX
DO 560 I=1,IMAX
IF (IFLAG(I,J).EQ.1) GO TO 559
UAVE(I,J) = UAVE(I,J)*DT/(60.0*TPER)
VAVE(I,J) = VAVE(I,J)*DT/(60.0*TPER)
DX(I,J) = 0.5*(UAVE(I,J)*TPER*30.0)**2.0/(TPER*60.0)
DY(I,J) = 0.5*(VAVE(I,J)*TPER*30.0)**2.0/(TPER*60.0)
559 PRINT 5505, I,J,UAVE(I,J),VAVE(I,J),DX(I,J),DY(I,J)
5505 FORMAT (5X,4HI = ,I2,5X,4HJ = ,I2,5X,7HUAVE = ,F8.5,4H FPS,5X,
*7HVAVE = ,F8.5,4H FPS,5X,5HDX = ,F8.2,10H FTSQD/SEC,5X,5HDY = ,
*F8.2,10H FTSQD/SEC)
560 CONTINUE
GO TO (21,22,21), IODISP
21 DO 209 J=1,JMAX
209 PUNCH 208, (UAVE(I,J),VAVE(I,J), I=1,IMAX)

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HYD 1172
HYD 1173
HYD 1174
HYD 1175
HYD 1176
HYD 1177
HYD 1178
HYD 1179
HYD 1180
HYD 1181
HYD 1182
HYD 1183
HYD 1184
HYD 1185
HYD 1186
HYD 1187
HYD 1188
HYD 1189
HYD 1190
HYD 1191
HYD 1192
HYD 1193
HYD 1223
HYD 1224
HYD 1225
HYD 1226
HYD 1227
HYD 1228
HYD 1229
HYD 1230
HYD 1231
HYD 1232
HYD 1233
HYD 1234
HYD 1235
HYD 1236
HYD 1237
HYD 1238
HYD 1239
HYD 1240
HYD 1242
HYD 1243
HYD 1244

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[illegible]

AD-A052 798

WATER RESOURCES ENGINEERS, INC AUSTIN TX

F/G 8/8

COMPARISON OF NUMERICAL /ND PHYSICAL HYDRAULIC MODELS, MASONBOR--ETC(U)

JUN 77 F D MASCH, R J BRANDES, J D REAGAN

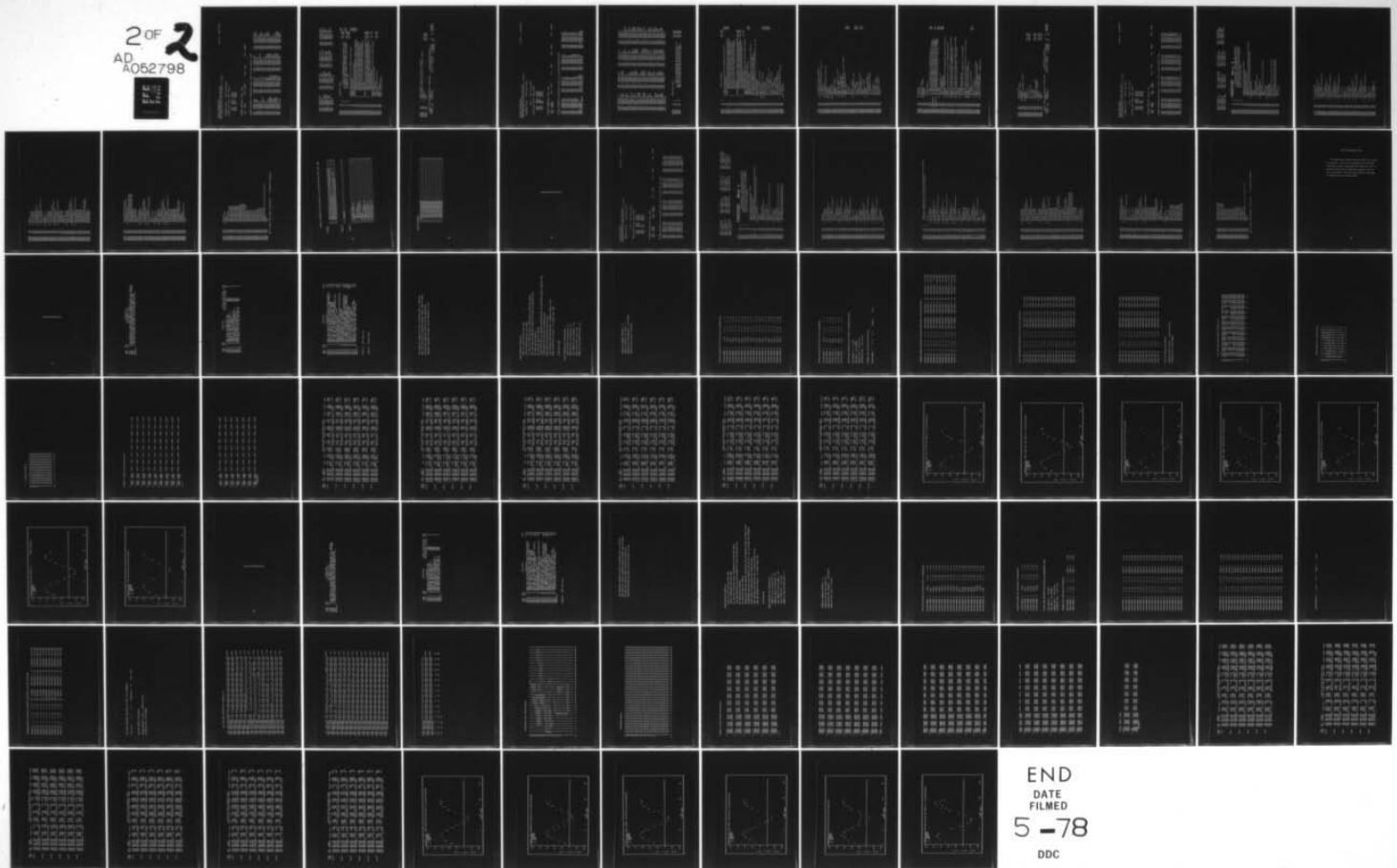
DACW72-72-C-0028

UNCLASSIFIED

CERC-6ITI-6-APP-2-VOL-2

NL

2 OF 2
AD-A052798



01 FOR,* MARKER,MARKER
 UNIVAC 1108 FORTRAN V LEVEL 2206 0023
 THIS COMPILATION WAS DONE ON 05 FEB 73 AT 12:06:49

05 FEB 73 12:06:49.688

SUBROUTINE STRVEL ENTRY POINT 000102

STORAGE USED (BLOCK, NAME, LENGTH)

0001 *CODE 000110
 0000 *DATA 000024
 0002 *BLANK 032477
 0003 ALL 007133

EXTERNAL REFERENCES (BLOCK, NAME)

0004	NWBUS	0005	NI02\$	0006	NI01\$	0007	NERR3\$
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STORAGE ASSIGNMENT FOR VARIABLES (BLOCK, TYPE, RELATIVE LOCATION, NAME)

0001	000067	10L	0001	000037	123G	0001	000040	125G	0001	000055	134G	
0001	000056	136G	0002	032436	AO	0002	021443	CB	0002	021777	CELSID	
0002	032434	CON1	0002	032435	CON2	0002	021063	CT	0002	032442	C1	
0002	032446	C2	0002	032452	C3	0002	R	000000	D	0002	032361	DS
0002	R	032365	DT	032404	DT0DS	0002	032432	DT02DS	0002	032366	DT2	
0002	032427	E	0002	013755	F	0002	032362	G	0002	032363	GCDT04	
0002	032364	GDT0DS	0002	021347	GTIME	0002	031103	G1	0002	031223	G41	
0002	031343	G42	0002	031463	G43	0003	004622	H	0002	023677	HF	
0002	004622	HN	0002	022667	HPLT	0002	022655	HPRT	0002	023763	HPRTA	
0000	I	000001	I	0002	022155	IBAR	0002	031603	IDTIDE	0002	016266	IFLAG
0002	020673	IFLOW	0002	I	032357	IMAX	0002	032421	INETFL	0000	000006	INJP\$
0002	032431	IODISP	0002	032424	IONFLO	0002	032423	IONVEL	0002	022561	IP	
0002	032422	IPDATA	0002	032430	ISAVGH	0002	021157	ITIDE	0000	I	000002	J
0002	022333	JBAR	0002	020767	JFLOW	0002	I	032360	JMAX	0002	022605	JP
0002	021253	JTIDE	0002	032412	KINDAT	0002	032413	KINIGH	0002	032433	KO	
0002	032420	KODISP	0002	032416	KONETF	0002	032415	KONETV	0002	I	032417	KOTVEL
0002	032410	KOUTCD	0002	032414	KOUTDA	0002	032411	KOUTPP	0002	032472	LINMAX	
0002	032407	M	0002	032402	NFLOW	0002	032425	NPLOT	0002	032401	NREEF	
0002	032403	NTIDE	0002	032373	OMEGA	0002	032374	PHI	0002	032456	PHI1	

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0002 032462 PHI2      0002 032466 PHI3      0002 032372 PTIME      0002 020577 QINFLO
0003 R 000000 QX      0002 007133 QXN      0003 R 002311 QY      011444 QYN
0002 032426 R        0002 022511 STATON      0000 R 000000 TAPTIM      032370 TCOUNT
0002 032376 THETA      0002 030643 THETA1      0002 030523 TI      031677 TIDE1
0002 032013 TIDE2      0002 032127 TIDE3      0002 032243 TIDE4      032473 TID1
0002 032474 TID2      0002 032475 TID3      0002 032476 TID4      023731 TIM
0002 R 032367 TIME      0002 R 032406 TIMVEL      0002 032405 TMARK      032371 TPER
0002 022631 UAPRT      0002 025423 UAPRTA      0002 022643 VAPRT      027063 VAPRTA
0002 032375 W        0002 030763 W2      0002 032377 XW      032400 YW
0002 002311 Z        0002 021621 ZR

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```

00101 1*
00101 2* C
00101 3* C
00101 4* C
00101 5* C
00101 6* C
00101 7* C
00103 8*
00103 9*
00104 10*
00105 11*
00105 12*
00105 13*
00105 14*
00105 15*
00105 16*
00105 17*
00106 18*
00106 19*
00106 20*
00106 21*
00106 22*
00107 23*
00110 24*
00111 25*
00112 26*
00114 27*
00115 28*
00116 29*

SUBROUTINE STRVEL
      THIS IS A SUBROUTINE WHICH AT THE OPTION OF THE
      USER STORES INSTANTANEOUS HYDRODYNAMICS FOR ALL CELLS
      AT SPECIFIED TIME INTERVALS AND STORES THESE VALUES
      ON MAGNETIC TAPE.

      COMMON D(35,35),Z(35,35),HN(35,35),QXN(35,35),QYN(35,35),
1F(35,35),IFLAG(35,35)
      COMMON/ALL/QX(35,35),QY(35,35),H(35,35)
      COMMON QINFLO(60),IFLOW(60),JFLOW(60),CT(60),ITIDE(60),JTIDE(60),
* GTIDE(60),CB(110),ZR(110),CELSID(110),IBAR(110),JBAR(110),
* STATON(2,20),IP(20),JP(20),UAPRT(10),VAPRT(10),HPRT(10),
* HPLT(26,20),HF(26),TIM(26),HPRTA(80,10),UAPRTA(80,10),
* VAPRTA(80,10),TI(80),THETA1(80),W2(80),G1(80),G41(80),
* G42(80),G43(80),IDTIDE(60),IDTIDE(60),TIDE1(76),TIDE2(76),TIDE3(76),
* TIDE4(76)
      COMMON IMAX,JMAX,DS,G,GCDT04,GDTODS,DT,DT2,TIME,TCOUNT,TPER,PTIME,
* OMEGA,PHI,W,THETA,XW,YW,NREEF,NFLOW,NTIDE,DTODS,TMARK,
* TIMVEL,M,KOUTCD,KOUTPP,KINDAT,KINIGH,KOUTDA,KONETV,KONETF,
* KOTVEL,KODISP,INETFL,IPDATA,IONVEL,IONFLO,NPLOT,R,E,
* ISAVGH,IODISP,DT02DS,KO
      COMMON CON1,CON2,AO(4),CI(4),C2(4),C3(4),PHI1(4),PHI2(4),PHI3(4)
      COMMON LINMAX,TID1,TID2,TID3,TID4
      TMARK = TMARK+DT
      IF (TMARK.LT.TIMVEL) GO TO 10
      TMARK = 0.0
      TAPTIM = TIME/60.0
      WRITE (KOTVEL) (TAPTIM)

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```

*NEW
HYD 1264*-1
HYD 1266
*NEW
HYD 1268*-1
HYD 1269
HYD 1270
*NEW
*NEW
*NEW
*NEW
*-3

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HYD 1281
HYD 1282
HYD 1283
HYD 1285
HYD 1290
HYD 1291

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00121	30*	WRITE (KOTVEL) ((D(I,J), I=1,IMAX), J=1,JMAX)			
00132	31*	WRITE (KOTVEL) ((GX(I,J),GY(I,J), I=1,IMAX), J=1,JMAX)			
00144	32*	10 CONTINUE			
00145	33*	RETURN			
00146	34*	END			

END OF UNIVAC 1108 FORTRAN V COMPILATION.		0 *DIAGNOSTIC* MESSAGE(S)	
MARKER	SYMBOLIC	05 MAY 72 12:54:39	0 00117464
MARKER	RELOCATABLE	05 MAY 72 12:54:39	1 00120402
			0 00120432

HYD 1301	14	33	(DELETED)
HYD 1302	24	1	(DELETED)
HYD 1303	14	9	

05 FEB 73 12:06:50.992

QI FOR,* PLOTS,PLOTHS
UNIVAC 1108 FORTRAN V LEVEL 2206 0023
THIS COMPILATION WAS DONE ON 05 FEB 73 AT 12:06:51

SUBROUTINE PLOTS ENTRY POINT 000774

HPLT ENTRY POINT 000777

STORAGE USED (BLOCK, NAME, LENGTH)

0001 *CODE 001002
0000 *DATA 000506
0002 *BLANK 032477
0003 ALL 007133
0004 MPRC 000002

EXTERNAL REFERENCES (BLOCK, NAME)

0005 NRDC\$	0006 NIO1\$	0007 NIO2\$	0010 NPRT\$	0011 NERR2\$
0012 NERR3\$				

STORAGE ASSIGNMENT FOR VARIABLES (BLOCK, TYPE, RELATIVE LOCATION, NAME)

0000	000363 10F	0000	000365 11F	0001	000232 12L	0001	000004 130G
0001	000011 134G	0001	000330 14L	0001	000022 143G	0001	000270 15L
0001	000030 151G	0001	000325 16L	0001	000335 17L	0000	000362 2055F
0001	000574 21L	0001	000164 213G	0001	000613 22L	0001	000174 222G
0001	000214 237G	0000	000424 25F	0000	000431 26F	0000	000437 27F
0001	000311 274G	0000	000444 28F	0001	000465 31L	0001	000332 310G
0001	000340 317G	0001	000506 32L	0001	000526 33L	0001	000477 346G
0001	000546 35L	0000	000373 36F	0001	000517 362G	0000	000404 37F
0001	000537 376G	0000	000414 38F	0001	000565 414G	0001	000605 427G
0001	000622 442G	0001	000647 451G	0001	000665 465G	0001	000675 474G
0001	000726 506G	0000	000357 707F	0000	000360 708F	0001	000112 710L
0001	000124 711L	0001	000141 712L	0001	000153 713L	0000	000370 9F
0000	R 000341 A	0000	R 000064 ACOLMN	0000	R 000332 ADOT	0000	R 000324 AEGUAL
0000	R 000325 AI	0000	R 000323 AMINUS	0002	032436 AO	0000	R 000331 APLUS
0000	R 000327 ASTRSK	0000	R 000330 BLANK	0002	021443 CB	0002	021777 CELSID

HYD	1312
HYD	1304
HYD	1306
HYD	1307
HYD	1308
HYD	1309

THIS IS A SUBROUTINE WHICH AT THE OPTION OF THE USER PLOTS BOTH THE COMPUTED AND OBSERVED TIDAL AMPLITUDES AT SPECIFIED GRID CELLS IN THE SYSTEM. THESE LINE PRINTER PLOTS CAN BE MADE FOR AS MANY AS

00101	1*	C
00101	2*	C
00101	3*	C
00101	4*	C
00101	5*	C
00101	6*	C

```

C
7* 00101
8* 00101
9* 00103
10* 00103
11* 00104
12* 00104
13* 00104
14* 00104
15* 00104
16* 00104
17* 00104
18* 00105
19* 00105
20* 00105
21* 00105
22* 00105
23* 00106
24* 00107
25* 00110
26* 00111
27* 00112
28* 00113
29* 00120
30* 00125
31* 00125
32* 00127
33* 00132
34* 00140
35* 00141
36* 00147
37* 00150
38* 00153
39* 00154
40* 00156
41* 00157
42* 00160
43* 00161
44* 00162
45* 00163
46* 00164
47* 00166
48* 00170
49* 00171

C
TWENTY LOCATIONS.
COMMON D(35,35),Z(35,35),HN(35,35),QXN(35,35),QYN(35,35),
1F(35,35),IFLAG(35,35)
COMMON QINFLO(60),IFLOW(60),JFLOW(60),CT(60),ITIDE(60),JTIDE(60),
* GTIDE(60),CB(110),ZB(110),CELSID(110),IBAR(110),JBAR(110),
* STATON(2,20),IP(20),JP(20),UAPRT(10),VAPRT(10),HPRT(10),
* HPLT(26,20),HF(26),TIM(26),HPRTA(80,10),UAPRTA(80,10),
* VAPRTA(80,10),TI(80),THETA1(80),W2(80),G1(80),G41(80),
* G42(80),G43(80),IDIIDE(60),TIDE1(76),TIDE2(76),TIDE3(76),
* TIDE4(76)
COMMON IMAX,JMAX,DS,G,GCDT04,GDTODS,DI,DT2,TIME,TCOUNT,TPER,PTIME,
* OMEGA,PHI,W,THETA,XW,YW,NREEF,NFLOW,NTIDE,DTODS,TMARK,
* TIMVEL,M,KOUTCD,KOUTPP,KINDAT,KINIGH,KOUTDA,KONETV,KONETF,
* KOTVEL,KODISP,INETFL,IPDATA,IONVEL,IONFLO,NPLOT,R,E,
* ISAVQH,IODISP,DT02DS,KO
COMMON CON1,CON2,AO(4),C1(4),C2(4),C3(4),PHI1(4),PHI2(4),PHI3(4)
COMMON LINMAX,TID1,TID2,TID3,TID4
COMMON/ALL/QX(35,35),QY(35,35),H(35,35)
COMMON/MPRC/HSHIFT,TIMTOT
DIMENSION IHF(26),IHPLT(26),ACOLMN(99),TITEL(20),TITELY(40)
DATA AMINUS/1H-/ ,AEQUAL/1H=/,AI/1HI/,CO/1HO/
DATA ASTRSK/1H*,BLANK/1H /,APLUS/1H+/,ADOT/1HX/
DATA TITELY/1H ,1HM,1HS,1HL,1H ,1H ,1HT,1HI,1HD,1HE,1H ,1H ,1HF,
*1HE,1HE,1HT,24*1H /
DO 100 J=1,NPLOT
READ 707, (TITEL(K), K=1,20)
707 FORMAT (20A4)
READ 708, (HF(L), L=1,26)
708 FORMAT (16F5,2)
DO 709 L=1,26
HF(L) = HF(L)-HSHIFT
IF (HF(L).LT.-1.29) HF(L) = 0.0
HF(L) = HF(L)*10.0
HPLT(L,J) = HPLT(L,J)*10.0
IHF(L) = HF(L)
IHPLT(L) = HPLT(L,J)
DIFHF = HF(L)-IHF(L)
DIFHP = HPLT(L,J)-IHPLT(L)
IF (DIFHF.LT.0.0) GO TO 710
IF (DIFHF.GE.0.5) IHF(L) = IHF(L)+1
GO TO 711
710 A = ABS(DIFHF)
711

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00172 50* IF (A,GE,0.5) IHF(L) = IHF(L)-1
00174 51* IF (DIFHP,LT,0.0) GO TO 712
00176 52* IF (DIFHP,GE,0.5) IHPLT(L) = IHPLT(L)+1
00200 53* GO TO 713
00201 54* A = ABS(DIFHP)
00202 55* IF (A,GE,0.5) IHPLT(L) = IHPLT(L)-1
00204 56* 713 CONTINUE
00205 57* 709 CONTINUE
00207 58* PRINT 2055
00211 59* FORMAT (1H1)
00212 60* DO 5 I=1,91
00215 61* ACOLMN(I) = ASTRSK
00216 62* 5 CONTINUE
00220 63* PRINT 10, (ACOLMN(I), I=1,91)
00226 64* 10 FORMAT (9X,91A1)
00227 65* PRINT 11, ASTRSK,ASTRSK
00233 66* 11 FORMAT (9X,A1,89X,A1)
00234 67* PRINT 9, ASTRSK, (ITEL(K), K=1,20), ASTRSK
00244 68* 9 FORMAT (9X,A1,9X,20A4,A1)
00245 69* TIDPRT = 6.0
00246 70* ITID = 52
00247 71* ITCONT = 5
00250 72* IT = 1
00251 73* 12 ITCONT = ITCONT+1
00252 74* IF (ITID,LT,16) IT = IT+1
00254 75* ITID = ITID-2
00255 76* ITIDM1 = ITID-1
00256 77* ACOLMN(1) = AI
00257 78* IF (ITCONT,LT,6) GO TO 15
00261 79* TIDPRT = TIDPRT-1.0
00262 80* ITCONT = 1
00263 81* ACOLMN(1) = APLUS
00264 82* 15 CONTINUE
00265 83* ITIDPR = 10.0*TIDPRT
00266 84* IF (ITIDPR,NE,0) GO TO 14
00270 85* IF (ITCONT,NE,1) GO TO 14
00272 86* ICC = 0
00273 87* DO 16 IC=2,76
00276 88* ICC = ICC+1
00277 89* ACOLMN(IC) = AMINUS
00300 90* IF (ICC,NE,6) GO TO 16
00302 91* ACOLMN(IC) = APLUS
00303 92* ICC = 0

```

*NEW
*NEW
**-2

*NEW
*NEW
**-1

*NEW
**-1

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00304 93* 16 CONTINUE
00306 94* GO TO 17
00307 95* 14 DO 13 IC = 2,76
00312 96* 13 ACOLMN(IC) = BLANK
00314 97* 17 CONTINUE
00315 98* L = 0
00316 99* DO 20 IC=1,76,3
00321 100* L = L+1
00322 101* IF (IHF(L).EQ.ITID.OR.IHF(L).EQ.ITIDM1) ACOLMN(IC) = CO
00324 102* IF (IHPLT(L).EQ.ITID.OR.IHPLT(L).EQ.ITIDM1) ACOLMN(IC) = ADOT
00326 103* *DIAGNOSTIC* THE TEST FOR EQUALITY BETWEEN NON-INTEGERS MAY NOT BE MEANINGFUL.
00326 103* IF (ACOLMN(IC).EQ.ADOT.AND.IHF(L).EQ.ITID) ACOLMN(IC) = AEQUAL
00330 104* *DIAGNOSTIC* THE TEST FOR EQUALITY BETWEEN NON-INTEGERS MAY NOT BE MEANINGFUL.
00330 104* IF (ACOLMN(IC).EQ.ADOT.AND.IHF(L).EQ.ITIDM1) ACOLMN(IC) = AEQUAL
00332 105* 20 CONTINUE
00332 105* IF (ITID.LT.46) GO TO 35
00334 106* IDUMY = (52-ITID)/2
00336 107* GO TO (31,32,33),IDUMY
00337 108* 31 PRINT 36, ASTRSK,TITELY(IT),TIDPRT,ACOLMN(1),(ACOLMN(IC),IC=16,76)
00340 109* *,ASTRSK
00340 110* 36 FORMAT (9X,A1,2X,A1,2X,F4.1,A1,3X,11H0 OBSERVED,61A1,4X,A1)
00353 111* GO TO 22
00354 112* 32 PRINT 37, ASTRSK,TITELY(IT),ACOLMN(1),(ACOLMN(IC),IC=16,76),ASTRSK
00355 113* 37 FORMAT (9X,A1,2X,A1,6X,A1,3X,11HX COMPUTED,61A1,4X,A1)
00367 114* GO TO 22
00370 115* 33 PRINT 38, ASTRSK,TITELY(IT),ACOLMN(1),(ACOLMN(IC),IC=16,76),ASTRSK
00371 116* 38 FORMAT (9X,A1,2X,A1,6X,A1,3X,11H= BOTH ,61A1,4X,A1)
00403 117* GO TO 22
00404 118* 35 CONTINUE
00405 119* IF (ITCONT.EQ.1) GO TO 21
00406 120* PRINT 25, ASTRSK,TITELY(IT),(ACOLMN(IC), IC=1,76),ASTRSK
00410 121* GO TO 22
00421 122* 21 PRINT 26, ASTRSK,TITELY(IT),TIDPRT,(ACOLMN(IC), IC=1,76),ASTRSK
00422 123* 25 FORMAT (9X,A1,2X,A1,6X,76A1,4X,A1)
00434 124* 26 FORMAT (9X,A1,2X,A1,2X,F4.1,76A1,4X,A1)
00435 125* 22 CONTINUE
00436 126* IF (TIDPRT.GT.-2.0) GO TO 12
00437 127* DO 30 I=1,5
00441 128* 30 IHF(I) = (I-1)*6.0
00444 129* PRINT 27, ASTRSK,(IHF(I), I=1,5),ASTRSK
00446 130* 27 FORMAT (9X,A1,8X,I2,4(16X,I2),7X,A1)
00456 131* PRINT 28, ASTRSK,ASTRSK
00457 132* 28 FORMAT (9X,A1,41X,12HTIME - HOURS,36X,A1)
00463 133*

```

*NEW
*NEW
*NEW
*NEW
*-3
*NEW
*NEW
*-2

*NEW
*-1

00464	134*	DO 29 I=1,91			
00467	135*	ACOLMN(I) = ASTRK			
00470	136*	29 CONTINUE			
00472	137*	PRINT10, (ACOLMN(I), I=1,91)			
00500	138*	100 CONTINUE			
00502	139*	RETURN			
00503	140*	ENTRY HPLOT			
00504	141*	M = M+1			
00505	142*	DO 47 K=1,NPLOT			
00510	143*	K1 = IP(K)			
00511	144*	K2 = JP(K)			
00512	145*	MM1 = M-1			
00513	146*	TIM(M)=PTIME/60.0*MM1			
00514	147*	HPLI(M,K) = H(K1,K2)			
00515	148*	47 CONTINUE			
00517	149*	RETURN			
00520	150*	END			
<p>END OF UNIVAC 1108 FORTRAN V COMPILATION.</p>					
PLOTHS	SYMBOLIC	05 MAY 72 12:54:41	0	00120630	14 144 (DELETED)
PLOTHS	RELOCATABLE	05 MAY 72 12:54:41	1	00124570	24 1 (DELETED)
			0	00124620	14 62

Q1 FOR RITAP,RITAP
UNIVAC 1108 FORTRAN V LEVEL 2206 0023
THIS COMPILATION WAS DONE ON 05 FEB 73 AT 12:06:53

SUBROUTINE RITAP ENTRY POINT 001127

RITCTP ENTRY POINT 001132

 STORAGE USED (BLOCK, NAME, LENGTH) |

0001	*CODE	001135
0000	*DATA	012011
0002	*BLANK	000000
0003	ALL	007133
0004	MRQ	000003
0005	MPRC	000002

EXTERNAL REFERENCES (BLOCK, NAME)

0006	NRD\$	0007	NI01\$	0010	NI02\$	0011	NRE\$	0012	NRB\$
0013	NWB\$	0014	NERR3\$						

 STORAGE ASSIGNMENT FOR VARIABLES (BLOCK, TYPE, RELATIVE LOCATION, NAME) |

0001	000014	1156	0001	000022	1226	0001	000036	1316	0001	000043	1356
0001	000055	1446	0001	000067	1536	0001	000074	1576	0001	000116	1646
0001	000140	1736	0001	000756	19L	0001	000053	20L	0001	000145	2006
0001	000161	2066	0001	000170	2146	0001	000204	2226	0001	011731	23F
0001	000213	2306	0001	000227	2366	0001	000236	2446	0001	000251	2536
0001	000256	2606	0001	000272	2666	0001	000301	2746	0001	000315	3026
0001	000323	3076	0001	000335	3166	0001	000342	3236	0001	000354	3316
0001	000361	3366	0001	000375	3446	0001	000403	3516	0001	000416	3606
0001	000423	3656	0001	000444	3756	0001	000462	4066	0001	000467	4136
0001	000510	4236	0001	000543	4426	0001	000603	4616	0001	000610	4666
0001	000631	4766	0001	000641	5046	0001	000654	5136	0001	000661	5206
0001	000702	5306	0001	000727	5446	0001	000100	6L	0001	01064	6156
0001	001071	6216	0000	R 007243	D	0000	R 011726	D10T	0003	R 004622	H
0000	R 002371	HOLD	0005	R 000000	HSHIFT	0000	R 002355	HTP	0000	R 002405	HTPU

```

0000 I 011723 I
0000 I 011721 KCTM
0000 I 011724 M
0000 R 002421 QS
0003 R 000000 QX
0000 R 011722 TMAX

0003 011763 INJP$
0004 I 000001 KQCTP
0000 I 011727 N
0000 R 004732 QT
0003 R 002311 QY
0000 R 000000 Z

0000 I 011730 J
0004 I 000002 KQFTP
0000 R 011554 Q
0000 R 002311 QTP
0000 R 011720 TIME
0000 R 011636 ZT

0000 I 011725 KCT
0004 000000 KR5OFN
0000 R 002325 QOLD
0000 R 002341 QTPU
0005 R 000001 TIMTOT

```

SUBROUTINE RITAP

Version 2

THIS SUBROUTINE STORES SELECTED FLOWS FROM A COARSE GRID MODEL, THEN INTERPOLATES BY TIME, DISTRIBUTES BY DEPTH PROPORTION, AND WRITES THE TRANSFER FLOWS ON MAGNETIC TAPE FOR SUBSEQUENT USE BY THE FINE GRID MODEL.

```

1* C
2* C
3* C
4* C
5* C
6* C
7* C
8* C
9* C
10* C
11* C
12* C
13* C
14* C
15* C
16* C
17* C
18* C
19* C
20* C
21* C
22* C
23* C
24* C
25* C
26* C
27* C
28* C
29* C
30* C
31* C
32* C
33* C

```

```

COMMON/ALL/QX(35,35),QY(35,35),H(35,35)
COMMON/MRG/KR5OFN,KQCTP,KQFTP
COMMON/MPRC/HSHIFT,TIMTOT
DIMENSION Z(35,35),QTP(12),QOLD(12),HTP(12),HOLD(12),
1HTPU(12),QS(35,35),QT(35,35),D(35,35),Q(50),ZT(50)
23 FORMAT(25X,F4.0)
TIME=0.
KCTM=4
TMAX=3600.*TIMTOT
READ(5,23)(ZT(I),I=1,46)
DO 65 I=1,46
65 ZT(I)=ZT(I)-HSHIFT
REWIND KQCTP
READ(KQCTP)(QTP(M),M=1,12),(HTP(M),M=1,12)
KCT=0
REWIND KQFTP
DO 20 DO 4 M=1,12
20 DO 4 M=1,12
HOLD(M)=HTP(M)
4 QOLD(M)=QTP(M)
5 READ(KQCTP)(QTP(M),M=1,12),(HTP(M),M=1,12)
6 DO 7 M=1,12
7 HTPU(M)=HOLD(M)+KCT/KCTM*(HTP(M)-HOLD(M))
8 QTPU(M)=QOLD(M)+KCT*(QTP(M)-QOLD(M))/KCTM
DTOT=0.
DO 45 I=9,19
45 I=9,19

```

00175	34*	45	Z(I,4)=ZT(I-8)
00177	35*		DO 27 I=9,12
00202	36*		D(I,4)=HTPU(1)-Z(I,4)
00203	37*	27	DTOT=DTOT+D(I,4)
00205	38*		DO 9 I=9,12
00210	39*	9	QT(I,4)=QTPU(1)/DTOT*D(I,4)
00212	40*		DTOT=0.
00213	41*		DO 28 I=13,16
00216	42*		D(I,4)=HTPU(2)-Z(I,4)
00217	43*	28	DTOT=DTOT+D(I,4)
00221	44*		DO 10 I=13,16
00224	45*	10	QT(I,4)=QTPU(2)/DTOT*D(I,4)
00226	46*		DTOT=0.
00227	47*		DO 29 I=17,19
00232	48*		D(I,4)=HTPU(3)-Z(I,4)
00233	49*	29	DTOT=DTOT+D(I,4)
00235	50*		DO 11 I=17,19
00240	51*	11	QT(I,4)=QTPU(3)/DTOT*D(I,4)
00242	52*		N=0
00243	53*		DO 36 I=9,19
00246	54*		N=N+1
00247	55*	36	Q(N)=QT(I,4)
00251	56*		DTOT=0.
00252	57*		DO 46 J=5,12
00255	58*	46	Z(8,J)=ZT(J+7)
00257	59*		DO 30 J=5,8
00262	60*		D(8,J)=HTPU(4)-Z(8,J)
00263	61*	30	DTOT=DTOT+D(8,J)
00265	62*		DO 12 J=5,8
00270	63*	12	QS(8,J)=QTPU(4)/DTOT*D(8,J)
00272	64*		DTOT=0.
00273	65*		DO 31 J=9,12
00276	66*		D(8,J)=HTPU(5)-Z(8,J)
00277	67*	31	DTOT=DTOT+D(8,J)
00301	68*		DO 13 J=9,12
00304	69*	13	QS(8,J)=QTPU(5)/DTOT*D(8,J)
00306	70*		DO 37 J=5,12
00311	71*		N=N+1
00312	72*	37	Q(N)=QS(8,J)
00314	73*		DTOT=0.
00315	74*		DO 62 J=13,15
00320	75*	62	QS(21,J)=QTPU(6)/3.
00322	76*		DO 63 J=13,15

```

00325 77*
00326 78*
00330 79*
00333 80*
00335 81*
00340 82*
00341 83*
00343 84*
00346 85*
00350 86*
00353 87*
00354 88*
00356 89*
00357 90*
00362 91*
00364 92*
00367 93*
00370 94*
00372 95*
00374 96*
00377 97*
00401 98*
00402 99*
00403 100*
00404 101*
00405 102*
00410 103*
00412 104*
00415 105*
00416 106*
00420 107*
00422 108*
00425 109*
00427 110*
00430 111*
00431 112*
00432 113*
00433 114*
00434 115*
00435 116*
00437 117*
00440 118*
00441 119*

      N=N+1
63 Q(N)=QS(21,J)
   DO 47 J=16,19
47 Z(1,J)=ZT(J+7)
   DO 32 J=16,19
   D(1,J)=HTPU(7)-Z(1,J)
32 DTOT=DTOT+D(1,J)
   DO 14 J=16,19
14 QS(1,J)=QTPU(7)/DTOT*D(1,J)
   DO 38 J=16,19
      N=N+1
38 Q(N)=QS(1,J)
   DTOT=0.
   DO 48 J=23,25
48 Z(4,J)=ZT(J+4)
   DO 24 J=23,25
   D(4,J)=HTPU(8)-Z(4,J)
   IF(D(4,J).LT.0.)D(4,J)=0.
24 DTOT=DTOT+D(4,J)
   DO 15 J=23,25
15 QS(4,J)=QTPU(8)/DTOT*D(4,J)
   Q(28)=QS(4,23)
   Q(30)=QS(4,24)
   Q(32)=QS(4,25)
   DTOT=0.
   DO 49 J=22,25
49 Z(32,J)=ZT(J+8)
   DO 25 J=22,25
   D(32,J)=HTPU(9)-Z(32,J)
   IF(D(32,J).LT.0.)D(32,J)=0.
25 DTOT=DTOT+D(32,J)
   DO 16 J=22,25
16 QS(32,J)=QTPU(9)/DTOT*D(32,J)
   Q(27)=QS(32,22)
   Q(29)=QS(32,23)
   Q(31)=QS(32,24)
   Q(36)=QS(32,25)
   Z(29,25)=ZT(34)
   D(29,25)=HTPU(10)-Z(29,25)
   IF(D(29,25).LT.0.)D(29,25)=0.
   DTOT=0.
   Z(31,25)=ZT(35)
   DO 26 I=31,32

```

```

00444 120* D(I,25)=HTPU(10)-Z(I,25)
00445 121* IF(D(I,25).LT.0.)D(I,25)=0.
00447 122* 26 DTOT=DTOT+D(I,25)
00451 123* QT(29,25)=QTU(10)*D(29,25)/DTOT
00452 124* QT(31,25)=QTU(10)*D(31,25)/DTOT
00453 125* QT(32,25)=QTU(10)*D(32,25)/DTOT
00454 126* Q(34)=QT(29,25)
00455 127* Q(35)=QT(31,25)
00456 128* Q(37)=QT(32,25)
00457 129* DTOT=0.
00460 130* DO 50 I=12,16
00463 131* 50 Z(I,28)=ZT(I+24)
00465 132* DO 33 I=12,16
00470 133* D(I,28)=HTPU(11)-Z(I,28)
00471 134* IF(D(I,28).LT.0.)D(I,28)=0.
00473 135* 33 DTOT=DTOT+D(I,28)
00475 136* DO 17 I=12,16
00500 137* 17 QT(I,28)=QTU(11)/DTOT*D(I,28)
00502 138* N=39
00503 139* DO 41 I=12,16
00506 140* N=N+1
00507 141* 41 Q(N)=QT(I,28)
00511 142* DTOT=0.
00512 143* DO 51 J=25,30
00515 144* 51 Z(20,J)=ZT(J+16)
00517 145* DO 34 J=25,30
00522 146* D(20,J)=HTPU(12)-Z(20,J)
00523 147* IF(D(20,J).LT.0.)D(20,J)=0.
00525 148* 34 DTOT=DTOT+D(20,J)
00527 149* DO 18 J=25,30
00532 150* 18 QS(20,J)=QTU(12)/DTOT*D(20,J)
00534 151* Q(33)=QS(20,25)
00535 152* Q(38)=QS(20,26)
00536 153* Q(39)=QS(20,27)
00537 154* Q(45)=QS(20,28)
00540 155* Q(46)=QS(20,29)
00541 156* Q(47)=QS(20,30)
00542 157* WRITE(KQFTP),(Q(N),N=1,47)
00550 158* IF(TIME.GE.TMAX)GO TO 19
00552 159* KCT=KCT+1
00553 160* TIME=TIME+5.
00554 161* IF(KCT.LE.KCTM)GO TO 6
00556 162* KCT=1

```

```

00557      163*      GO TO 20
00560      164*      19 REWIND KQCTP
00561      165*      RETURN
00562      166*      ENTRY RITCTP
00563      167*      QTP(1)=QY(5,5)*20.
00564      168*      QTP(2)=QY(6,5)*20.
00565      169*      QTP(3)=QY(7,5)*20.
00566      170*      QTP(4)=QX(4,6)*20.
00567      171*      QTP(5)=QX(4,7)*20.
00570      172*      QTP(6)=QX(7,8)*20.
00571      173*      QTP(7)=QX(2,9)*20.
00572      174*      QTP(8)=QX(3,10)*20.
00573      175*      QTP(9)=QX(10,10)*20.
00574      176*      QTP(10)=QY(10,10)*20.
00575      177*      QTP(11)=QY(6,11)*20.
00576      178*      QTP(12)=QX(7,11)*20.
00577      179*      HTP(1)=H(5,5)
00600      180*      HTP(2)=H(6,5)
00601      181*      HTP(3)=H(7,5)
00602      182*      HTP(4)=H(4,6)
00603      183*      HTP(5)=H(4,7)
00604      184*      HTP(6)=H(7,8)
00605      185*      HTP(7)=H(2,9)
00606      186*      HTP(8)=H(3,10)
00607      187*      HTP(9)=H(10,10)
00610      188*      HTP(10)=H(10,10)
00611      189*      HTP(11)=H(6,11)
00612      190*      HTP(12)=H(7,11)
00613      191*      WRITE(KQCTP)(QTP(1),I=1,12),(HTP(1),I=1,12)
00625      192*      RETURN
00626      193*      END

```

END OF UNIVAC 1108 FORTRAN V COMPILATION. 0 *DIAGNOSTIC* MESSAGE(S)

INSERTS IN PROGRAM HYOTID FOR SIMULATION OF INLET GEOMETRY WITHOUT JETTY (NOV. 1964)

Insert 1

	DATA/IFLOW/9,10,11,12,13,14,15,16,17,18,19,20,21,8,21,8,21,
	18,21,8,21,8,21,8,21,3*21,4*1,32,4,32,4,20,29,31,32,32,
	220,20,12,13,14,15,16,3*20,3*0/
	DATA/JFLOW/13*4,2*5,2*6,2*7,2*8,2*9,2*10,2*11,2*12,13,14,15,
	116,17,18,19,22,2*23,2*24,6*25,26,27,6*28,29,30,3*0/

Insert 2

	INFLOW=57
--	-----------

Insert 3

	DO 702 I=9,21
702	QY(I,4)=QINFLO(I-8)
	N=14
	DO 703 J=5,12
	QX(8,J)=QINFLO(N)
	QX(21,J)=QINFLO(N+1)
703	N=N+2
	DO 704 J=13,15
704	QX(21,J)=QINFLO(J+17)
	DO 705 J=16,19
705	QX(1,J)=QINFLO(J+17)
	DO 706 I=12,16
706	QY(I,28)=QINFLO(I+38)
	DO 707 J=28,30

Insert 3 continued

707	QX(20,J)=QINFLO(J+27)
	QX(32,22)=QINFLO(37)
	QX(4,23)=QINFLO(39)
	QX(32,23)=QINFLO(39)
	QX(4,24)=QINFLO(40)
	QX(32,24)=QINFLO(41)
	QX(4,25)=QINFLO(42)
	QX(20,25)=QINFLO(43)
	QY(29,25)=QINFLO(44)
	QY(31,25)=QINFLO(45)
	QX(32,25)=QINFLO(46)
	QY(32,25)=QINFLO(47)
	QX(20,26)=QINFLO(48)
	QX(20,27)=QINFLO(49)

Subroutine RITAP, Version I

05 FEB 73 11:32:18.172

GI FOR RITAP,RITAP
UNIVAC 1108 FORTRAN V LEVEL 2206 0023
THIS COMPILATION WAS DONE ON 05 FEB 73 AT 11:32:18

SUBROUTINE RITAP ENTRY POINT 001244

RITCTP ENTRY POINT 001247

STORAGE USED (BLOCK, NAME, LENGTH)

0001 *CODE 001252
0000 *DATA G12024
0002 *BLANK 000000
0003 ALL 007133
0004 MRW 000003
0005 MPRC 000002

EXTERNAL REFERENCES (BLOCK, NAME)

0006 NRDU\$	0007 N101\$	0010 N102\$	0011 N103\$	0012 N104\$	NRBUS
0013 NWBUS	0014 NERR3\$				

STORAGE ASSIGNMENT FOR VARIABLES (BLOCK, TYPE, RELATIVE LOCATION, NAME)

0001	000014	115G	0001	000022	122G	0001	000036	131G	0001	000043	135G
0001	000055	144G	0001	000067	153G	0001	000074	157G	0001	000116	164G
0001	000135	173G	0001	001061	19L	0001	000053	20L	0001	000142	200G
0001	000156	206G	0001	000165	214G	0001	000201	222G	0000	011745	23F
0001	000210	230G	0001	000224	236G	0001	000233	244G	0001	000246	253G
0001	000253	260G	0001	000267	266G	0001	000276	274G	0001	000312	302G
0001	000322	310G	0001	000335	317G	0001	000342	324G	0001	000356	332G
0001	000365	340G	0001	000401	346G	0001	000410	354G	0001	000424	362G
0001	000434	370G	0001	000454	401G	0001	000462	407G	0001	000476	415G
0001	000506	423G	0001	000521	432G	0001	000526	437G	0001	000547	447G
0001	000565	460G	0001	000572	465G	0001	000613	475G	0001	000646	514G
0001	000706	533G	0001	000713	540G	0001	000734	550G	0001	000744	556G
0001	000757	565G	0001	000764	572G	0001	000100	6L	0001	001005	602G
0001	001032	616G	0001	001201	673G	0001	001206	677G	0000	R	007257 D

```

0000 K 011742 DTOT
0000 R 002363 HTP
0000 I 011744 J
0004 I 000002 KQFTP
0000 R 011570 W
0000 K 002311 QTP
0000 R 011734 TIME
0000 R 011652 ZT
0003 R 004622 H
0000 R 002417 HTPU
0000 I 011741 KCT
0004 I 000000 KR50FN
0000 R 002327 QOLD
0000 R 002345 QTPU
0005 R 000001 TIMTOT
0000 R 002401 HOLD
0000 I 011737 I
0000 I 011735 KCTM
0000 I 011740 M
0000 R 002435 QS
0003 R 000000 QX
0000 R 011736 TMAX
0005 R 000000 HSHIFT
0000 011776 INJPS
0004 I 000001 KQCTF
0000 I 011743 N
0000 R 004746 QT
0003 R 002311 QY
0000 K 000000 Z

```

Version 1

SUBROUTINE RIATP

```

00101 1*
00101 2*
00101 3* C
00101 4* C
00101 5* C
00101 6* C
00101 7* C
00101 8* C
00103 9*
00104 10*
00105 11*
00106 12*
00106 13*
00107 14*
00110 15*
00111 16*
00112 17*
00113 18*
00121 19*
00124 20*
00126 21*
00127 22*
00141 23*
00142 24*
00143 25*
00146 26*
00147 27*
00151 28*
00163 29*
00166 30*
00167 31*

      THIS SUBROUTINE STORES SELECTED FLOWS FROM A
      COARSE GRID MODEL, THEN INTERPOLATES BY TIME,
      DISTRIBUTES BY DEPTH PROPORTION, AND WRITES THE
      TRANSFER FLOWS ON MAGNETIC TAPE FOR SUBSEQUENT
      USE BY THE FINE GRID MODEL.

      COMMON/ALL/QX(35,35),QY(35,35),H(35,35)
      COMMON/FRW/KR50FN,KQCTP,KQFTP
      COMMON/MPRC/MSHIFT,TIMTOT
      DIMENSION Z(35,35),QTP(14),QOLD(14),GTPU(14),HTP(14),HOLD(14),
      1HTPU(14),QS(35,35),QT(35,35),D(35,35),Q(50),ZT(50)
      23 FORMAT(25X,F4.0)
      TIME=0.
      KCTM=4
      TMAX=3600.*TIMTOT
      READ(5,23)(ZT(I),I=1,56)
      DO 65 I=1,56
        65 ZT(I)=ZT(I)-HSHIFT
      REWIND KQCTP
      READ(KQCTP)(QTP(M),M=1,14),(HTP(M),M=1,14)
      KCT=0
      REWIND KQFTP
      DO 4 M=1,14
        20 DO 4 M=1,14
          HOLD(M)=HTP(M)
          4 QOLD(M)=GTP(M)
          5 READ(KQCTP)(QTP(M),M=1,14),(HTP(M),M=1,14)
          6 DO 7 M=1,14
            HTPU(M)=HOLD(M)+KCT/KCTM*(HTP(M)-HOLD(M))
            7 QTPU(M)=QOLD(M)+KCT*(QTP(M)-QOLD(M))/KCTM

```

```

00171 32* DTOT=0.
00172 33* DO 45 I=9,21
00173 34* 45 Z(I,4)=ZT(I-8)
00174 35* DO 27 I=9,12
00175 36* D(I,4)=HTPU(I)-Z(I,4)
00176 37* 27 DTOT=DTOT+D(I,4)
00177 38* DO 9 I=9,12
00178 39* 9 QT(I,4)=QTPU(I)/DTOT*D(I,4)
00179 40* DTOT=0.
00180 41* DO 28 I=13,16
00181 42* D(I,4)=HTPU(2)-Z(I,4)
00182 43* 28 DTOT=DTOT+D(I,4)
00183 44* DO 10 I=13,16
00184 45* 10 QT(I,4)=QTPU(2)/DTOT*D(I,4)
00185 46* DTOT=0.
00186 47* DO 29 I=17,21
00187 48* D(I,4)=HTPU(3)-Z(I,4)
00188 49* 29 DTOT=DTOT+D(I,4)
00189 50* DO 11 I=17,21
00190 51* 11 QT(I,4)=QTPU(3)/DTOT*D(I,4)
00191 52* N=0
00192 53* DO 36 I=9,21
00193 54* N=N+1
00194 55* 36 Q(N)=QT(I,4)
00195 56* DTOT=0.
00196 57* DO 46 J=5,12
00197 58* 46 Z(8,J)=ZT(J+7)
00198 59* DO 30 J=5,8
00199 60* D(8,J)=HTPU(4)-Z(8,J)
00200 61* 30 DTOT=DTOT+D(8,J)
00201 62* DO 12 J=5,8
00202 63* 12 Q(8,J)=QTPU(4)/DTOT*D(8,J)
00203 64* DTOT=0.
00204 65* DO 31 J=9,12
00205 66* D(8,J)=HTPU(5)-Z(8,J)
00206 67* 31 DTOT=DTOT+D(8,J)
00207 68* DO 13 J=9,12
00208 69* 13 Q(8,J)=QTPU(5)/DTOT*D(8,J)
00209 70* N=14
00210 71* DO 109 J=5,12
00211 72* Q(N)=Q(8,J)
00212 73* 109 N=N+2
00213 74* C

```

00313	75•	C	ARRANGE ZT IN ORDER (9-21,4),(8,5-12),(21,5-15),(1,16-19),(4,23-25),
00313	76•	C	(32,22-25),(29,25),(31-32,25),(12-16,28),(20,25-30)
00313	77•	C	
00315	78•		DTOT=0.
00316	79•		DO 101 J=5,15
00321	80•		101 Z(21,J)=ZT(J+17)
00323	81•		DO 102 J=5,8
00326	82•		D(21,J)=HTPU(13)-Z(21,J)
00327	83•		102 DTOT=DTOT+D(21,J)
00331	84•		DO 103 J=5,8
00334	85•		103 QS(21,J)=QTPU(13)/DTOT*D(21,J)
00336	86•		DTOT=0.
00337	87•		DO 104 J=9,12
00342	88•		D(21,J)=HTPU(14)-Z(21,J)
00343	89•		104 DTOT=DTOT+D(21,J)
00345	90•		DO 105 J=9,12
00350	91•		105 QS(21,J)=QTPU(14)/DTOT*D(21,J)
00352	92•		DTOT=0.
00353	93•		DO 106 J=13,15
00356	94•		D(21,J)=HTPU(6)-Z(21,J)
00357	95•		106 DTOT=DTOT+D(21,J)
00361	96•		DO 107 J=13,15
00364	97•		107 QS(21,J)=QTPU(6)/DTOT*D(21,J)
00366	98•		N=15
00367	99•		DO 108 J=5,12
00372	100•		Q(N)=QS(21,J)
00373	101•		108 N=N+2
00375	102•		Q(30)=QS(21,13)
00376	103•		Q(31)=QS(21,14)
00377	104•		Q(32)=QS(21,15)
00400	105•		DO 47 J=16,19
00403	106•		47 Z(1,J)=ZT(J+17)
00405	107•		DTOT=0.
00406	108•		DO 32 J=16,19
00411	109•		D(1,J)=HTPU(7)-Z(1,J)
00412	110•		32 DTOT=DTOT+D(1,J)
00414	111•		DO 14 J=16,19
00417	112•		14 QS(1,J)=QTPU(7)/DTOT*D(1,J)
00421	113•		N=32
00422	114•		DO 34 J=16,19
00425	115•		N=N+1
00426	116•		38 Q(N)=QS(1,J)
00430	117•		DTOT=0.

```

00431 118*
00434 119*
00436 120*
00441 121*
00442 122*
00444 123*
00446 124*
00451 125*
00453 126*
00454 127*
00455 128*
00456 129*
00457 130*
00462 131*
00464 132*
00467 133*
00470 134*
00472 135*
00474 136*
00477 137*
00501 138*
00502 139*
00503 140*
00504 141*
00505 142*
00506 143*
00507 144*
00511 145*
00512 146*
00513 147*
00516 148*
00517 149*
00521 150*
00523 151*
00524 152*
00525 153*
00526 154*
00527 155*
00530 156*
00531 157*
00532 158*
00535 159*
00537 160*

00 48 J=23,25
48 Z(4,J)=ZT(J+4)
00 24 J=23,25
D(4,J)=HTPU(8)-Z(4,J)
IF(D(4,J).LT.0.)D(4,J)=0.
24 DTOT=DTOT+D(4,J)
00 15 J=23,25
15 QS(4,J)=QTPU(8)/DTOT*D(4,J)
Q(38)=QS(4,23)
Q(40)=QS(4,24)
Q(42)=QS(4,25)
DTOT=0.
00 49 J=22,25
49 Z(32,J)=ZT(J+8)
00 25 J=22,25
D(32,J)=HTPU(9)-Z(32,J)
IF(D(32,J).LT.0.)D(32,J)=0.
25 DTOT=DTOT+D(32,J)
00 16 J=22,25
16 QS(32,J)=QTPU(9)/DTOT*D(32,J)
Q(37)=QS(32,22)
Q(39)=QS(32,23)
Q(41)=QS(32,24)
Q(46)=QS(32,25)
Z(29,25)=ZT(34)
D(29,25)=HTPU(10)-Z(29,25)
IF(D(29,25).LT.0.)D(29,25)=0.
DTOT=D(29,25)
Z(31,25)=ZT(35)
00 26 I=31,32
D(1,25)=HTPU(10)-Z(1,25)
IF(D(1,25).LT.0.)D(1,25)=0.
26 DTOT=DTOT+D(1,25)
QT(29,25)=QTPU(10)*D(29,25)/DTOT
QT(31,25)=QTPU(10)*D(31,25)/DTOT
QT(32,25)=QTPU(10)*D(32,25)/DTOT
Q(44)=QT(29,25)
Q(45)=QT(31,25)
Q(47)=QT(32,25)
DTOT=0.
00 50 I=12,16
50 Z(1,28)=ZT(I+24)
00 33 I=12,16

```

```

00542      D(I,28)=HTPU(I,1)-Z(I,28)
00543      IF(D(I,28).LT.0.)D(I,28)=0.
00545      33 DTOT=DTOT+D(I,28)
00547      DO 17 I=12,16
00552      17 Q(I,28)=QTPU(I,1)/DTOT*D(I,28)
00554      N=49
00555      DO 41 I=12,16
00560      N=N+1
00561      41 Q(N)=Q(I,28)
00563      DTOT=0.
00564      DO 51 J=25,30
00567      51 Z(20,J)=ZT(J+16)
00571      DO 34 J=25,30
00574      D(20,J)=HTPU(12)-Z(20,J)
00575      IF(D(20,J).LT.0.)D(20,J)=0.
00577      34 DTOT=DTOT+D(20,J)
00601      DO 18 J=25,30
00604      18 QS(20,J)=QTPU(12)/DTOT*D(20,J)
00606      Q(43)=QS(20,25)
00607      Q(48)=QS(20,26)
00610      Q(49)=QS(20,27)
00611      Q(55)=QS(20,28)
00612      Q(56)=QS(20,29)
00613      Q(57)=QS(20,30)
00614      WRITE(KQFTP)(Q(N),N=1,57)
00622      IF(TIME.GE.TMAX)GO TO 19
00624      KCT=KCT+1
00625      TIME=TIME+5.
00626      IF(KCT.LE.KCTM)GO TO 6
00630      KCT=1
00631      GO TO 20
00632      19 REWIND KQCTP
00633      RETURN
00634      ENTRY RITCTP
00635      QTP(1)=QY(5,5)*20.
00636      QTP(2)=QY(6,5)*20.
00637      QTP(3)=QY(7,5)*20.
00640      QTP(4)=QX(4,6)*20.
00641      QTP(5)=QX(4,7)*20.
00642      QTP(6)=QX(7,8)*20.
00643      QTP(7)=QX(2,9)*20.
00644      QTP(8)=QX(3,10)*20.
00645      QTP(9)=QX(10,10)*20.

```

00646	204*	QTP(10)=QY(10,10)*20.
00647	205*	QTP(11)=QY(6,11)*20.
00650	206*	QTP(12)=QX(7,11)*20.
00651	207*	QTP(13)=QX(7,6)*20.
00652	208*	QTP(14)=QX(7,7)*20.
00653	209*	HTP(1)=H(5,5)
00654	210*	HTP(2)=H(6,5)
00655	211*	HTP(3)=H(7,5)
00656	212*	HTP(4)=H(4,6)
00657	213*	HTP(5)=H(4,7)
00660	214*	HTP(6)=H(7,8)
00661	215*	HTP(7)=H(2,9)
00662	216*	HTP(8)=H(3,10)
00663	217*	HTP(9)=H(10,10)
00664	218*	HTP(10)=H(10,10)
00665	219*	HTP(11)=H(6,11)
00666	220*	HTP(12)=H(7,11)
00667	221*	HTP(13)=H(7,6)
00670	222*	HTP(14)=H(7,7)
00671	223*	WRITE(KQCTP)(QTP(1),I=1,14),(HTP(1),I=1,14)
00703	224*	RETURN
00704	225*	END

END OF UNIVAC 1108 FORTRAN V COMPILATION. 0 *DIAGNOSTIC* MESSAGE(5)

OUTPUT FROM PROGRAM HYDTID

Two complete sets of sample output from HYDTID are included in this section. Both are for simulation of the verification period 0400 to 2100 on 12 September 1969, however the first is output from the coarse grid model and the second is from the fine grid sub-model. Each set includes exactly the same types of information but for different models.

Coarse Grid Model Output

CARD TYPE	CARD NO	DESCRIPTION ALPHANUMERIC TITLE
----	----	-----
TITLE	1	TWO DIMENSIONAL HYDRODYNAMIC MODEL OF MASONBORO INLET (N. CAROLINA)
TITLE	2	MODEL STUDY FOR COASTAL ENGINEERING RESEARCH CENTER (CORPS OF ENGRS)
TITLE	3	RUN MADE USING COARSE GRID MODEL FOR INITIAL VERIFICATION
TITLE	4	SIMULATION PERFORMED FOR PERIOD 400-2100 SEPTEMBER 12, 1969
ENDTITLE		

CARD TYPE	CARD NO	DESCRIPTION	TYPE OF INPUT/OUTPUT CARD, TAPE, BOTH, OR NONE	TAPE NO
FILE A	1	READ BASIC CELL INPUT DATA FROM	CARD	0
FILE A	2	READ INITIAL HYDRODYNAMICS FROM	CARD	0
FILE A	3	COMPUTE AND SAVE NET VELOCITIES ON	NONE	0
FILE A	4	COMPUTE AND SAVE NET FLOWS ON	NONE	0
FILE A	5	COMPUTE AND SAVE DISPERSION COEF. ON	NONE	0
FILE A	6	STORE ENDING VALUES OF HYDRODYNAMICS ON	NONE	0
FILE A	7	STORE INSTANTANEOUS VELOCITIES ON	NONE	0
FILE A	8	WRITE/READ INPUTS FOR FINE GRID MODEL ON	TAPE	1
FILE A	9	STORE COARSE GRID DATA FOR FINE GRID ON	TAPE	2
ENDFILE	A			

CARD TYPE	CARD NO	DESCRIPTION	VALUE
FILE R	1	MODEL TYPE (1=COARSE PROD, 2=FINE PROD, 3=COARSE NON-PROD)	1.0
FILE R	2	PRINT INPUT DATA (1=NO PRINT, 2=W/MANN, N, 3=W/O MANN, N)	2.0
FILE R	3	NUMBER OF STATIONS FOR WHICH PLOTS ARE DESIRED	7.0
FILE R	4	TOTAL REAL TIME FOR OPERATION OF MODEL (HOURS)	17.0
FILE R	5	START REAL TIME FOR OPERATION OF MODEL (HOURS)	4.0
FILE R	6	REAL TIME INT. FOR STORING INSTANT. HYDRODYNAMICS (MIN)	.0
FILE R	7	REAL TIME PERIOD OF TIDAL CYCLE (HOURS)	12.5
FILE R	8	INITIAL WIND MAGNITUDE (KNOTS)	4.0
FILE R	9	DIRECTION FROM WHICH INITIAL WIND BLOWS (CLOCKWISE FROM N)	20.0
FILE R	10	AVERAGE PRECIPITATION RATE (INCHES/DAY)	.0
FILE R	11	AVERAGE EVAPORATION RATE (INCHES/DAY)	.0
FILE R	12	ANGLE BETWEEN NORTH AND X-AXIS (DEG. CLOCKWISE FROM N.)	48.0
FILE R	13	TOTAL NUMBER OF COMPUTATIONAL ELEMENTS IN X-DIRECTION	12.0
FILE R	14	TOTAL NUMBER OF COMPUTATIONAL ELEMENTS IN Y-DIRECTION	16.0
FILE R	15	GRID SIZE OF COMPUTATIONAL ELEMENTS (FEET)	1200.0
FILE R	16	PROGRAM COMPUTATIONAL TIME STEP (SECONDS)	20.0
FILE R	17	LATITUDE OF ESTUARINE SYSTEM (DEGREES)	34.2
FILE R	18	NUMBER OF OUTPUT SFTS (HOURS) PRINTED PER PAGE	6.0
FILE R	19	COMPUTE NET FLOWS BUT DO NOT STORE (1=YES, 2=NO)	2.0
FILE R	20	DIFFERENCE BETWEEN MSL AND INPUT DATUM (FEET)	1.3

ENDFILE C BASIC CELL DATA

ENDFILE D EXCITING TIDES

TWO DIMENSIONAL HYDRODYNAMIC MODEL OF MASONBORO INLET (N. CAROLINA)
MODEL STUDY FOR COASTAL ENGINEERING RESEARCH CENTER (CORPS OF ENGRS)
RUN MADE USING COARSE GRID MODEL FOR INITIAL VERIFICATION
SIMULATION PERFORMED FOR PERIOD 400-2100 SEPTEMBER 12, 1969

MODEL-OPERATION INFORMATION

BASIC CELL INPUT DATA READ FROM CARDS

INITIAL HYDRODYNAMICS READ FROM CARDS

ALL INPUT DATA (EXCLUDING INITIAL HYDRODYNAMICS) PRINTED AND LABELED

TIDAL AMPLITUDES AND FLOWS WERE COMPUTED AND PRINTED FOR SELECTED CELLS

NET FLOWS WERE NOT COMPUTED

NET VELOCITIES WERE NOT COMPUTED

AVERAGE VELOCITIES AND DISPERSION COEFFICIENTS WERE NOT PUNCHED ON CARDS OR STORED ON TAPE

INSTANTANEOUS VELOCITIES WERE NOT STORED ON TAPE

ENDING VALUES OF HYDRODYNAMICS WERE NOT SAVED

TIDAL AMPLITUDE PLOTS WERE MADE FOR 7 SELECTED STATIONS IN BAY

MODEL WAS OPERATED TO SIMULATE 17.0 HOURS OF REAL TIME

COARSE GRID MODEL

MODEL DIMENSIONS AND CHARACTERISTICS

NUMBER OF CELLS IN X-DIRECTION = 12

NUMBER OF CELLS IN Y-DIRECTION = 16

TOTAL NUMBER OF CELLS IN MODEL = 192

WIDTH OF EACH CELL = 1200.0 FEET

NUMBER OF TIDAL EXCITATION CELLS = 32

NUMBER OF SUBMERGED BARRIERS = 11
NUMBER OF EXTERNAL FLOW SOURCES = 0
COMPUTATIONAL TIME INCREMENT = .333 MINUTES
PERIOD OF TIDAL CYCLE = 12.5 HOURS

STATION LOCATIONS FOR TIME PRINT-OUT OF HYDRODYNAMICS

STATION NUMBER 1	I7J6	I = 7	J = 6
STATION NUMBER 2	I7J8	I = 7	J = 8
STATION NUMBER 3	I6J10	I = 6	J = 10
STATION NUMBER 4	I9J10	I = 9	J = 10
STATION NUMBER 5	I3J9	I = 3	J = 9
STATION NUMBER 6	I11J8	I = 11	J = 8
STATION NUMBER 7	I7J13	I = 7	J = 13
STATION NUMBER 8	I10J10	I = 10	J = 10
STATION NUMBER 9	I11J10	I = 11	J = 10
STATION NUMBER 10	I6J8	I = 6	J = 8
STATION NUMBER 11	I6J7	I = 6	J = 7
STATION NUMBER 12	I6J11	I = 6	J = 11
STATION NUMBER 13	I6J12	I = 6	J = 12
STATION NUMBER 14	I3J11	I = 3	J = 11
STATION NUMBER 15	I7J7	I = 7	J = 7
STATION NUMBER 16	I2J13	I = 2	J = 13
STATION NUMBER 17	I8J12	I = 8	J = 12
STATION NUMBER 18	I8J13	I = 8	J = 13
STATION NUMBER 19	I10J13	I = 10	J = 13
STATION NUMBER 20	I11J15	I = 11	J = 15

STATION LOCATIONS FOR TIME PLOTS OF HYDRODYNAMICS

STATION NUMBER 1	I7J6	I = 7	J = 6
STATION NUMBER 2	I7J8	I = 7	J = 8
STATION NUMBER 3	I6J10	I = 6	J = 10
STATION NUMBER 4	I9J10	I = 9	J = 10
STATION NUMBER 5	I3J9	I = 3	J = 9
STATION NUMBER 6	I11J8	I = 11	J = 8
STATION NUMBER 7	I7J13	I = 7	J = 13

INITIAL WIND CONDITIONS AND RAINFALL AND EVAPORATION RATES

WIND VELOCITY = 4.0 KNOTS

WIND ANGLE = 20.0 DEGREES

RAINFALL RATE = .000 IN./DAY

EVAPORATION RATE = .000 IN./DAY

EXTERNAL FLOW LOCATIONS AND QUANTITIES

INFLOW NUMBER 1	I = 0	J = 0	QINFLO = .0 CFS
-----------------	-------	-------	-----------------

SUBMERGED BARRIER LOCATIONS, DISCHARGE COEFFICIENTS, AND MSL ELEVATIONS

BARRIER NO.	1	I = 6	J = 6	SIDE BOUNDARY	COEFFICIENT = .50	ELEVATION = -6.3 FEET
BARRIER NO.	2	I = 6	J = 7	SIDE BOUNDARY	COEFFICIENT = .40	ELEVATION = -1.3 FEET
BARRIER NO.	3	I = 6	J = 8	SIDE BOUNDARY	COEFFICIENT = .40	ELEVATION = -2.3 FEET
BARRIER NO.	4	I = 7	J = 8	SIDE BOUNDARY	COEFFICIENT = .50	ELEVATION = .7 FEET
BARRIER NO.	5	I = 7	J = 8	TOP BOUNDARY	COEFFICIENT = 1.30	ELEVATION = -12.2 FEET
BARRIER NO.	6	I = 3	J = 9	SIDE BOUNDARY	COEFFICIENT = .90	ELEVATION = -4.5 FEET
BARRIER NO.	7	I = 5	J = 9	SIDE BOUNDARY	COEFFICIENT = .90	ELEVATION = -5.7 FEET
BARRIER NO.	8	I = 6	J = 10	TOP BOUNDARY	COEFFICIENT = .90	ELEVATION = -8.2 FEET
BARRIER NO.	9	I = 7	J = 10	SIDE BOUNDARY	COEFFICIENT = .90	ELEVATION = -7.2 FEET
BARRIER NO.	10	I = 9	J = 10	SIDE BOUNDARY	COEFFICIENT = .90	ELEVATION = -10.2 FEET
BARRIER NO.	11	I = 11	J = 10	TOP BOUNDARY	COEFFICIENT = .90	ELEVATION = -3.2 FEET

GULF TIDAL DISCHARGE COEFFICIENTS AND CELL TIDE ASSIGNMENTS

TIDAL CELL 1	I = 3	J = 1	COEFFICIENT = 2.00	TIDE = TIDE1
TIDAL CELL 2	I = 4	J = 1	COEFFICIENT = 2.00	TIDE = TIDE1
TIDAL CELL 3	I = 5	J = 1	COEFFICIENT = 2.00	TIDE = TIDE1
TIDAL CELL 4	I = 6	J = 1	COEFFICIENT = 2.00	TIDE = TIDE1
TIDAL CELL 5	I = 7	J = 1	COEFFICIENT = 2.00	TIDE = TIDE1
TIDAL CELL 6	I = 8	J = 1	COEFFICIENT = 2.00	TIDE = TIDE1
TIDAL CELL 7	I = 9	J = 1	COEFFICIENT = 2.00	TIDE = TIDE1
TIDAL CELL 8	I = 10	J = 1	COEFFICIENT = 2.00	TIDE = TIDE1
TIDAL CELL 9	I = 1	J = 2	COEFFICIENT = 2.00	TIDE = TIDE1
TIDAL CELL 10	I = 11	J = 2	COEFFICIENT = 2.00	TIDE = TIDE1
TIDAL CELL 11	I = 1	J = 3	COEFFICIENT = 2.00	TIDE = TIDE1
TIDAL CELL 12	I = 11	J = 3	COEFFICIENT = 2.00	TIDE = TIDE1
TIDAL CELL 13	I = 1	J = 4	COEFFICIENT = 2.00	TIDE = TIDE1
TIDAL CELL 14	I = 11	J = 4	COEFFICIENT = 2.00	TIDE = TIDE1
TIDAL CELL 15	I = 1	J = 5	COEFFICIENT = 2.00	TIDE = TIDE1
TIDAL CELL 16	I = 11	J = 5	COEFFICIENT = 2.00	TIDE = TIDE1
TIDAL CELL 17	I = 1	J = 6	COEFFICIENT = 2.00	TIDE = TIDE1
TIDAL CELL 18	I = 11	J = 6	COEFFICIENT = 2.00	TIDE = TIDE1

TIDAL CELL 19	I = 1	J = 7	COEFFICIENT = 2.00	TIDE = TIDE1
TIDAL CELL 20	I = 11	J = 7	COEFFICIENT = 2.00	TIDE = TIDE1
TIDAL CELL 21	I = 1	J = 8	COEFFICIENT = 2.00	TIDE = TIDE2
TIDAL CELL 22	I = 11	J = 8	COEFFICIENT = 2.00	TIDE = TIDE1
TIDAL CELL 23	I = 1	J = 9	COEFFICIENT = 2.00	TIDE = TIDE2
TIDAL CELL 24	I = 11	J = 9	COEFFICIENT = 2.00	TIDE = TIDE1
TIDAL CELL 25	I = 1	J = 10	COEFFICIENT = 2.00	TIDE = TIDE4
TIDAL CELL 26	I = 11	J = 10	COEFFICIENT = 2.00	TIDE = TIDE3
TIDAL CELL 27	I = 1	J = 11	COEFFICIENT = 2.00	TIDE = TIDE4
TIDAL CELL 28	I = 11	J = 11	COEFFICIENT = 2.00	TIDE = TIDE3
TIDAL CELL 29	I = 1	J = 12	COEFFICIENT = 2.00	TIDE = TIDE4
TIDAL CELL 30	I = 11	J = 12	COEFFICIENT = 2.00	TIDE = TIDE3
TIDAL CELL 31	I = 11	J = 13	COEFFICIENT = 2.00	TIDE = TIDE3
TIDAL CELL 32	I = 11	J = 15	COEFFICIENT = 2.00	TIDE = TIDE3

DATA FOR CORIOLIS ACCELERATION

ANGULAR ROTATION OF EARTH = .0000729 RAD./SEC.

LATITUDE OF BAY = 34.20 DEGREES

[illegible]

[illegible]

J/I	1	2	3	4	5	6	7	8	9	10	11	12
-----	---	---	---	---	---	---	---	---	---	----	----	----

16	11	11	11	11	11	11	11	11	11	11	11	11
15	11	11	11	11	11	11	11	11	41	21	11	11
14	11	11	11	11	11	11	21	33	14	11	11	11
13	11	11	11	41	11	21	12	11	42	11	11	11
12	11	42	21	33	21	12	11	42	41	13	14	11
11	11	33	12	11	41	22	21	33	31	11	14	11
10	11	21	22	21	33	44	21	21	33	14	11	11
9	11	21	21	21	21	33	14	11	11	11	11	11
8	11	12	11	11	11	41	22	41	41	41	12	11
7	11	41	41	41	41	13	14	13	11	11	14	11
6	11	13	11	11	11	11	14	13	11	11	14	11
5	11	13	11	11	11	11	44	13	11	11	14	11
4	11	13	11	11	11	11	11	11	11	11	14	11
3	11	13	11	11	11	11	11	11	11	11	14	11
2	11	33	31	31	31	31	31	31	31	31	14	11
1	11	11	11	11	11	11	11	11	11	11	11	11
J/I	1	2	3	4	5	6	7	8	9	10	11	12

[illegible]

.01000 .05200 .04600 .04600 .03300 .03200 .03300 .03100 .03000
.02900 .00000

J = 11

.01000 .03900 .04900 .01000 .05200 .03300 .04600 .04600 .04600
.03900 .00000

J = 12

.01000 .03900 .03400 .03400 .03300 .01000 .05200 .05200 .05200
.04400 .00000

J = 13

.01000 .04600 .01000 .04600 .03400 .03400 .03400 .01000 .05300
.04400 .00000

J = 14

.01000 .01000 .01000 .01000 .01000 .01000 .04900 .04900 .04900
.01000 .00000

J = 15

.01000 .01000 .01000 .01000 .01000 .01000 .05200 .04900 .04900
.04900 .00000

J = 16

.00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000
.00000 .00000

ENDFILE

TIME HOURS	SEA TIDE	HYDRO- DYNAMICS	PRINTOUT STATIONS THROUGHOUT SYSTEM							
			I6J10	I9J10	I3J9	I11J8	I7J13	I10J10	I11J10	I6J8
4.00	.920	MSL TIDE	.604	.423	.338	.929	.374	.374	.348	.849
	.000	XFO CFS	-9866.	13690.	-6872.	-2982.	3841.	13300.	8626.	1970.
	.400	YFO CFS	14485.	0.	0.	-1374.	0.	0.	4339.	0.
	.250	GRD ELEV	-10.30	-10.30	-4.60	-26.30	-5.30	-11.30	-12.30	-4.30
	.250	WIND SPEED = 4.0 KNOTS								
WIND DIRECTION = 208.0 DEGREES W.R.T. X-AXIS										
5.00	1.900	MSL TIDE	1.545	1.396	1.224	1.864	1.346	1.351	1.335	1.780
	.730	XFO CFS	-11771.	14747.	-9363.	-3023.	4857.	13379.	8064.	2457.
	1.170	YFO CFS	16145.	0.	0.	-1528.	0.	1045.	4992.	0.
	1.150	GRD ELEV	-10.30	-10.30	-4.60	-26.30	-5.30	-11.30	-12.30	-4.30
	1.150	WIND SPEED = 4.0 KNOTS								
WIND DIRECTION = 208.0 DEGREES W.R.T. X-AXIS										
6.00	2.700	MSL TIDE	2.313	2.157	1.943	2.662	2.109	2.108	2.094	2.570
	1.410	XFO CFS	-13965.	16929.	-11624.	-3124.	5599.	14924.	8767.	3115.
	1.920	YFO CFS	18660.	0.	0.	-1707.	0.	1705.	5855.	0.
	1.900	GRD ELEV	-10.30	-10.30	-4.60	-26.30	-5.30	-11.30	-12.30	-4.30
	1.900	WIND SPEED = 4.0 KNOTS								
WIND DIRECTION = 208.0 DEGREES W.R.T. X-AXIS										
7.00	3.120	MSL TIDE	2.836	2.739	2.471	3.088	2.707	2.706	2.701	3.020
	1.960	XFO CFS	-13488.	15034.	-12703.	-2541.	5084.	12982.	7245.	2933.
	2.560	YFO CFS	16630.	0.	0.	-1505.	0.	1817.	5500.	0.
	2.570	GRD ELEV	-10.30	-10.30	-4.60	-26.30	-5.30	-11.30	-12.30	-4.30
	2.570	WIND SPEED = 4.0 KNOTS								
WIND DIRECTION = 208.0 DEGREES W.R.T. X-AXIS										
8.00	3.030	MSL TIDE	3.033	3.054	2.838	3.018	3.046	3.062	3.071	3.018
	2.550	XFO CFS	-7979.	4165.	-9841.	-886.	1525.	3382.	1006.	548.
	3.050	YFO CFS	6146.	0.	0.	-639.	0.	662.	2250.	0.
	3.020	GRD ELEV	-10.30	-10.30	-4.60	-26.30	-5.30	-11.30	-12.30	-4.30
	3.020	WIND SPEED = 4.0 KNOTS								
WIND DIRECTION = 208.0 DEGREES W.R.T. X-AXIS										
9.00	2.500	MSL TIDE	2.808	2.861	2.873	2.524	2.952	2.896	2.918	2.530
	2.970	XFO CFS	5382.	-13638.	3264.	1963.	-1906.	-11814.	-6460.	-3547.
	3.040	YFO CFS	-16198.	0.	0.	1035.	0.	-1787.	-5321.	0.
	3.320	GRD ELEV	-10.30	-10.30	-4.60	-26.30	-5.30	-11.30	-12.30	-4.30
	3.320	WIND SPEED = 4.0 KNOTS								
WIND DIRECTION = 208.0 DEGREES W.R.T. X-AXIS										

TIME HOURS	SEA TIDE	HYDRO- DYNAMICS	PRINTOUT STATIONS THROUGHOUT SYSTEM									
			I7J6	I7J8	I6J10	I9J10	I3J9	I11J8	I7J13	I10J10	I11J10	I6J8
10.00	1.600	MSL TIDE	1.643	1.724	2.119	2.199	2.297	1.637	2.345	2.248	2.280	1.631
	2.600	XFLO CFS	0.	961.	8857.	-16307.	8993.	2996.	-3193.	-14313.	-7631.	-3533.
	2.430	YFLO CFS	-41623.	-46945.	-19365.	0.	0.	1525.	0.	-1728.	-6420.	0.
	2.680	GRD ELEV	-23.30	-15.30	-10.30	-10.30	-4.60	-26.30	-5.30	-11.30	-12.30	-4.30
	2.680	WIND SPEED = 4.0 KNOTS						WIND DIRECTION = 208.0 DEGREES		W.R.T. X-AXIS		
11.00	.570	MSL TIDE	.623	.743	1.278	1.403	1.543	.609	1.595	1.468	1.512	.602
	1.950	XFLO CFS	0.	36.	9722.	-17696.	9505.	3175.	-3929.	-16291.	-9290.	-3220.
	1.700	YFLO CFS	-46563.	-50253.	-20333.	0.	0.	1529.	0.	-1088.	-6693.	0.
	2.020	GRD ELEV	-23.30	-15.30	-10.30	-10.30	-4.60	-26.30	-5.30	-11.30	-12.30	-4.30
	2.020	WIND SPEED = 4.0 KNOTS						WIND DIRECTION = 208.0 DEGREES		W.R.T. X-AXIS		
12.00	-.350	MSL TIDE	-.297	-.172	.378	.524	.719	-.315	.724	.594	.636	-.324
	1.200	XFLO CFS	0.	0.	9290.	-16575.	8717.	2766.	-3855.	-16089.	-9775.	-2291.
	.840	YFLO CFS	-44268.	-46466.	-18472.	0.	0.	1270.	0.	0.	-6032.	0.
	1.170	GRD ELEV	-23.30	-15.30	-10.30	-10.30	-4.60	-26.30	-5.30	-11.30	-12.30	-4.30
	1.170	WIND SPEED = 4.0 KNOTS						WIND DIRECTION = 208.0 DEGREES		W.R.T. X-AXIS		
13.00	-.950	MSL TIDE	-.911	-.811	-.366	-.240	-.041	-.923	-.073	-.203	-.161	-.932
	.430	XFLO CFS	0.	0.	8198.	-13620.	6944.	2091.	-2662.	-11708.	-7459.	-1424.
	-.000	YFLO CFS	-37463.	-38608.	-15737.	0.	0.	968.	0.	0.	-3996.	0.
	.380	GRD ELEV	-23.30	-15.30	-10.30	-10.30	-4.60	-26.30	-5.30	-11.30	-12.30	-4.30
	.380	WIND SPEED = 4.0 KNOTS						WIND DIRECTION = 208.0 DEGREES		W.R.T. X-AXIS		
14.00	-1.000	MSL TIDE	-.986	-.953	-.764	-.738	-.555	-.986	-.626	-.742	-.722	-.993
	-.200	XFLO CFS	0.	0.	6203.	-7926.	4847.	990.	-1163.	-5260.	-3256.	-788.
	-.650	YFLO CFS	-24092.	-24886.	-11025.	0.	0.	547.	0.	0.	-1888.	0.
	-.300	GRD ELEV	-23.30	-15.30	-10.30	-10.30	-4.60	-26.30	-5.30	-11.30	-12.30	-4.30
	-.300	WIND SPEED = 4.0 KNOTS						WIND DIRECTION = 208.0 DEGREES		W.R.T. X-AXIS		
15.00	-.500	MSL TIDE	-.526	-.563	-.611	-.649	-.679	-.505	-.637	-.682	-.682	-.517
	-.730	XFLO CFS	0.	0.	2077.	1767.	-399.	-551.	939.	4132.	3048.	1000.
	-.750	YFLO CFS	-1230.	-153.	-2987.	0.	0.	-126.	0.	0.	918.	0.
	-.580	GRD ELEV	-23.30	-15.30	-10.30	-10.30	-4.60	-26.30	-5.30	-11.30	-12.30	-4.30
	-.580	WIND SPEED = 4.0 KNOTS						WIND DIRECTION = 208.0 DEGREES		W.R.T. X-AXIS		

TIME HOURS	SEA TIDE	HYDRO- DYNAMICS	PRINTOUT STATIONS THROUGHOUT SYSTEM									
			16J10	19J10	13J9	11J8	17J13	110J10	111J10	16J8		
16.00	.380 -.460 -.220 -.300 -.300	MSL TIDE XFLO CFS YFLO CFS GRD ELEV WIND SPEED = 4.0 KNOTS	.330 0. 27179. -23.30	.263 0. 28785. -15.30	.132 -7193. 10691. -10.30	.007 10449. 0. -10.30	-.078 -5413. 0. -4.60	.354 -2156. -963. -26.30	-.029 2992. 0. -5.30	-.036 11550. 0. -11.30	-.051 7859. 3384. -12.30	.303 1419. 0. -4.30
17.00	1.550 .250 .550 .400 .400	MSL TIDE XFLO CFS YFLO CFS GRD ELEV WIND SPEED = 4.0 KNOTS	1.472 0. 41866. -23.30	1.348 -971. 46343. -15.30	1.099 -12198. 17992. -10.30	.854 17114. 0. -10.30	.778 -8571. 0. -4.60	1.512 -3214. -1555. -26.30	.817 4762. 0. -5.30	.788 15889. 870. -11.30	.764 10326. 5283. -12.30	1.411 2533. 0. -4.30
18.00	2.320 1.080 1.500 1.320 1.320	MSL TIDE XFLO CFS YFLO CFS GRD ELEV WIND SPEED = 4.0 KNOTS	2.248 0. 43382. -23.30	2.136 -1924. 49802. -15.30	1.912 -14281. 19903. -10.30	1.745 16976. 0. -10.30	1.579 -10338. 0. -4.60	2.284 -2948. -1593. -26.30	1.659 5375. 0. -5.30	1.695 15082. 1537. -11.30	1.681 8935. 5786. -12.30	2.189 2871. 0. -4.30
19.00	2.910 1.860 2.170 2.150 2.150	MSL TIDE XFLO CFS YFLO CFS GRD ELEV WIND SPEED = 4.0 KNOTS	2.844 0. 41882. -23.30	2.746 -2529. 49510. -15.30	2.555 -14125. 10329. -10.30	2.404 17269. 0. -10.30	2.270 -10867. 0. -4.60	2.876 -2760. -1571. -26.30	2.360 5592. 0. -5.30	2.356 15179. 1828. -11.30	2.344 8878. 6037. -12.30	2.793 3084. 0. -4.30
20.00	3.130 2.500 2.680 2.680 2.680	MSL TIDE XFLO CFS YFLO CFS GRD ELEV WIND SPEED = 4.0 KNOTS	3.087 0. 33630. -23.30	3.033 -2115. 39985. -15.30	2.926 -11625. 15561. -10.30	2.842 14092. 0. -10.30	2.761 -9129. 0. -4.60	3.105 -1969. -1216. -26.30	2.819 4752. 0. -5.30	2.815 12247. 1667. -11.30	2.811 6819. 5248. -12.30	3.057 2420. 0. -4.30
21.00	2.550 2.820 2.950 2.970 2.970	MSL TIDE XFLO CFS YFLO CFS GRD ELEV WIND SPEED = 4.0 KNOTS	2.598 0. -6279. -23.30	2.660 1997. -13335. -15.30	2.774 -92. -6418. -10.30	2.828 -7009. 0. -10.30	2.807 -753. 0. -4.60	2.561 986. 370. -26.30	2.861 -1345. 0. -5.30	2.857 -5266. -1714. -11.30	2.879 -3748. -1506. -12.30	2.599 -3280. 0. -4.30

TIME HOURS	SEA TIDE	HYDRO- DYNAMICS	PRINTOUT STATIONS THROUGHOUT SYSTEM									
			16J7	16J11	16J12	13J11	17J7	12J13	18J12	18J13	110J13	111J15
4.00	.920	MSL TIDE	.907	.523	.427	.231	.860	.179	.319	.337	.191	.186
	.000	XFLO CFS	1354.	0.	0.	0.	0.	0.	79.	0.	300.	529.
	.400	YFLO CFS	2413.	14389.	4571.	-1041.	36422.	0.	-439.	3067.	-875.	0.
	.250	GRD ELEV	-6.30	-8.30	-9.30	-1.30	-19.30	-1.30	-30	-5.30	-3.30	-5.30
	.250	WIND SPEED = 4.0 KNOTS						208.0 DEGREES	W.R.T. X-AXIS			
5.00	1.900	MSL TIDE	1.840	1.460	1.392	1.264	1.796	1.253	1.288	1.312	1.205	1.198
	.730	XFLO CFS	1909.	426.	0.	0.	0.	0.	395.	0.	368.	813.
	1.170	YFLO CFS	2835.	15124.	5473.	-1668.	39471.	0.	-948.	3581.	-833.	0.
	1.150	GRD ELEV	-6.30	-8.30	-9.30	-1.30	-19.30	-1.30	-30	-5.30	-3.30	-5.30
	1.150	WIND SPEED = 4.0 KNOTS						208.0 DEGREES	W.R.T. X-AXIS			
6.00	2.700	MSL TIDE	2.637	2.218	2.151	2.017	2.587	2.013	2.062	2.079	1.982	1.967
	1.410	XFLO CFS	2535.	604.	0.	0.	0.	0.	611.	0.	914.	1556.
	1.920	YFLO CFS	3430.	17184.	6199.	-2187.	44428.	0.	-1109.	4186.	-791.	0.
	1.900	GRD ELEV	-6.30	-8.30	-9.30	-1.30	-19.30	-1.30	-30	-5.30	-3.30	-5.30
	1.900	WIND SPEED = 4.0 KNOTS						208.0 DEGREES	W.R.T. X-AXIS			
7.00	3.120	MSL TIDE	3.071	2.771	2.732	2.656	3.034	2.658	2.682	2.690	2.626	2.612
	1.960	XFLO CFS	2469.	722.	0.	0.	0.	0.	625.	0.	1071.	1854.
	2.560	YFLO CFS	3111.	15014.	5542.	-2190.	40731.	0.	-860.	3989.	-643.	0.
	2.570	GRD ELEV	-6.30	-8.30	-9.30	-1.30	-19.30	-1.30	-30	-5.30	-3.30	-5.30
	2.570	WIND SPEED = 4.0 KNOTS						208.0 DEGREES	W.R.T. X-AXIS			
8.00	3.030	MSL TIDE	3.024	3.034	3.038	3.046	3.022	3.048	3.051	3.050	3.061	3.063
	2.550	XFLO CFS	873.	-25.	0.	0.	0.	0.	-33.	0.	-23.	443.
	3.050	YFLO CFS	548.	5780.	1764.	-973.	19996.	0.	-212.	1183.	163.	0.
	3.020	GRD ELEV	-6.30	-8.30	-9.30	-1.30	-19.30	-1.30	-30	-5.30	-3.30	-5.30
	3.020	WIND SPEED = 4.0 KNOTS						208.0 DEGREES	W.R.T. X-AXIS			
9.00	2.500	MSL TIDE	2.531	2.870	2.946	3.119	2.563	3.144	2.953	2.955	2.976	2.987
	2.970	XFLO CFS	-1934.	-571.	0.	0.	0.	0.	-80.	0.	-987.	-2086.
	3.040	YFLO CFS	-3764.	-15058.	-1913.	3339.	-28650.	0.	-343.	-2241.	72.	0.
	3.320	GRD ELEV	-6.30	-8.30	-9.30	-1.30	-19.30	-1.30	-30	-5.30	-3.30	-5.30
	3.320	WIND SPEED = 4.0 KNOTS						208.0 DEGREES	W.R.T. X-AXIS			

TIME HOURS	SEA TIDE	HYDRO- DYNAMICS	PRINTOUT STATIONS THROUGHOUT SYSTEM									
			I6J12	I3J11	I7J7	I2J13	I8J12	I8J13	I10J13	I11J15		
10.00	1.600 2.600 2.430 2.680 2.680	MSL TIDE XFLO CFS YFLO CFS GRD ELEV WIND SPEED = 4.0 KNOTS	1.639 -1524. -3893. -6.30 4.0 KNOTS	2.209 -678. -17654. -8.30 4.0 KNOTS	2.503 0. 3059. -1.30 WIND DIRECTION = 208.0 DEGREES	1.670 0. -42794. -19.30 WIND DIRECTION = 208.0 DEGREES	2.528 0. 0. -1.30 WIND DIRECTION = 208.0 DEGREES	2.362 -260. 431. -30 W.R.T. X-AXIS	2.359 0. -2503. -5.30 W.R.T. X-AXIS	2.386 -322. -246. -3.30 W.R.T. X-AXIS	2.393 -1251. 0. -5.30 W.R.T. X-AXIS	
11.00	.570 1.950 1.700 2.020 2.020	MSL TIDE XFLO CFS YFLO CFS GRD ELEV WIND SPEED = 4.0 KNOTS	.614 -1214. -3626. -6.30 4.0 KNOTS	1.393 -407. -19064. -8.30 4.0 KNOTS	1.806 0. 2733. -1.30 WIND DIRECTION = 208.0 DEGREES	.661 0. -47385. -19.30 WIND DIRECTION = 208.0 DEGREES	1.848 0. 0. -1.30 WIND DIRECTION = 208.0 DEGREES	1.631 -344. 850. -30 W.R.T. X-AXIS	1.620 0. -2779. -5.30 W.R.T. X-AXIS	1.665 -241. 125. -3.30 W.R.T. X-AXIS	1.671 -905. 0. -5.30 W.R.T. X-AXIS	
12.00	-.350 1.200 .840 1.170 1.170	MSL TIDE XFLO CFS YFLO CFS GRD ELEV WIND SPEED = 4.0 KNOTS	-.309 -651. -2668. -6.30 4.0 KNOTS	.495 0. -17667. -8.30 4.0 KNOTS	.939 0. 1954. -1.30 WIND DIRECTION = 208.0 DEGREES	-.259 0. -44533. -19.30 WIND DIRECTION = 208.0 DEGREES	1.003 0. 0. -1.30 WIND DIRECTION = 208.0 DEGREES	.778 -247. 755. -30 W.R.T. X-AXIS	.760 0. -2758. -5.30 W.R.T. X-AXIS	.827 106. 463. -3.30 W.R.T. X-AXIS	.827 -277. 0. -5.30 W.R.T. X-AXIS	
13.00	-.950 .430 -.000 .380 .380	MSL TIDE XFLO CFS YFLO CFS GRD ELEV WIND SPEED = 4.0 KNOTS	-.916 -222. -1666. -6.30 4.0 KNOTS	-.256 0. -14295. -8.30 4.0 KNOTS	.131 0. 1056. -1.30 WIND DIRECTION = 208.0 DEGREES	-.880 0. -37437. -19.30 WIND DIRECTION = 208.0 DEGREES	.223 0. 0. -1.30 WIND DIRECTION = 208.0 DEGREES	-.032 -95. 404. -30 W.R.T. X-AXIS	-.047 0. -1947. -5.30 W.R.T. X-AXIS	.003 150. 448. -3.30 W.R.T. X-AXIS	-.001 115. 0. -5.30 W.R.T. X-AXIS	
14.00	-1.000 -.200 -.650 -.300 -.300	MSL TIDE XFLO CFS YFLO CFS GRD ELEV WIND SPEED = 4.0 KNOTS	-.981 -84. -810. -6.30 4.0 KNOTS	-.699 0. -9285. -8.30 4.0 KNOTS	-.493 0. 517. -1.30 WIND DIRECTION = 208.0 DEGREES	-.977 0. -24145. -19.30 WIND DIRECTION = 208.0 DEGREES	-.416 0. 0. -1.30 WIND DIRECTION = 208.0 DEGREES	-.300 -30. 0. -30 W.R.T. X-AXIS	-.624 0. -719. -5.30 W.R.T. X-AXIS	-.626 238. 129. -3.30 W.R.T. X-AXIS	-.635 546. 0. -5.30 W.R.T. X-AXIS	
15.00	-.500 -.730 -.750 -.580 -.580	MSL TIDE XFLO CFS YFLO CFS GRD ELEV WIND SPEED = 4.0 KNOTS	-.510 374. 1173. -6.30 4.0 KNOTS	-.603 0. -1320. -8.30 4.0 KNOTS	-.636 0. 65. -1.30 WIND DIRECTION = 208.0 DEGREES	-.542 0. -1013. -19.30 WIND DIRECTION = 208.0 DEGREES	-.629 0. 0. -1.30 WIND DIRECTION = 208.0 DEGREES	-.300 -18. 0. -30 W.R.T. X-AXIS	-.647 0. 1150. -5.30 W.R.T. X-AXIS	-.698 399. -240. -3.30 W.R.T. X-AXIS	-.720 885. 0. -5.30 W.R.T. X-AXIS	

TIME HOURS	SEA TIDE	HYDRO- DYNAMICS	PRINTOUT STATIONS THROUGHOUT SYSTEM									
			16J12	13J11	17J7	12J13	18J12	18J13	110J13	111J15		
16.00	.380 -.460 -.220 -.300 -.300	MSL TIDE XFLO CFS YFLO CFS GRD ELEV WIND SPEED = 4.0 KNOTS	.340 853. 1752. -6.30	.086 0. 10988. -8.30	.009 0. 3489. -9.30	-.135 0. -676. -1.30	.306 0. 27690. -19.30	-.183 0. 0. -1.30	-.067 -.23. -212. -.30	-.059 0. 2535. -5.30	-.189 346. -750. -3.30	-.196 632. 0. -5.30
17.00	1.550 .250 .550 .400 .400	MSL TIDE XFLO CFS YFLO CFS GRD ELEV WIND SPEED = 4.0 KNOTS	1.483 1833. 2977. -6.30	.983 0. 17261. -8.30	.875 0. 5415. -9.30	.627 0. -1404. -1.30	1.429 0. 43254. -19.30	.566 0. 0. -1.30	.752 298. -642. -.30	.774 0. 3783. -5.30	.593 530. -1181. -3.30	.583 957. 0. -5.30
18.00	2.320 1.080 1.500 1.320 1.320	MSL TIDE XFLO CFS YFLO CFS GRD ELEV WIND SPEED = 4.0 KNOTS	2.257 2245. 3180. -6.30	1.796 415. 18803. -8.30	1.706 0. 6050. -9.30	1.488 0. -2278. -1.30	2.210 0. 45318. -19.30	1.470 0. 0. -1.30	1.598 491. -1235. -.30	1.626 0. 3792. -5.30	1.535 318. -774. -3.30	1.527 781. 0. -5.30
19.00	2.910 1.860 2.170 2.150 2.150	MSL TIDE XFLO CFS YFLO CFS GRD ELEV WIND SPEED = 4.0 KNOTS	2.853 2496. 3324. -6.30	2.460 686. 17689. -8.30	2.308 0. 6138. -9.30	2.267 0. -2442. -1.30	2.810 0. 44139. -19.30	2.266 0. 0. -1.30	2.320 650. -1016. -.30	2.334 0. 4303. -5.30	2.241 1101. -793. -3.30	2.224 1868. 0. -5.30
20.00	3.130 2.500 2.680 2.680 2.680	MSL TIDE XFLO CFS YFLO CFS GRD ELEV WIND SPEED = 4.0 KNOTS	3.093 2032. 2523. -6.30	2.871 662. 14203. -8.30	2.839 0. 5090. -9.30	2.770 0. -2142. -1.30	3.069 0. 35562. -19.30	2.771 0. 0. -1.30	2.799 608. -727. -.30	2.805 0. 3849. -5.30	2.749 1166. -683. -3.30	2.735 2014. 0. -5.30
21.00	2.550 2.820 2.950 2.970 2.970	MSL TIDE XFLO CFS YFLO CFS GRD ELEV WIND SPEED = 4.0 KNOTS	2.583 -2170. -3533. -6.30	2.807 -552. -5478. -8.30	2.840 0. -1398. -9.30	2.910 0. 1334. -1.30	2.626 0. -8251. -19.30	2.917 0. 0. -1.30	2.876 -364. 126. -.30	2.874 0. -1201. -5.30	2.910 -709. 164. -3.30	2.923 -1086. 0. -5.30

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12 18 24

2

[illegible]

[illegible]

[illegible]

[illegible]

Fine Grid Sub-Model Output

CARD TYPE	CARD NO	DESCRIPTION ALPHANUMERIC TITLE
----	----	-----
TITLE	1	TWO DIMENSIONAL HYDRODYNAMIC MODEL OF MASONBORO INLET (N. CAROLINA)
TITLE	2	MODEL STUDY FOR COASTAL ENGINEERING RESEARCH CENTER (CORPS OF ENGRS)
TITLE	3	RUN MADE USING FINE GRID MODEL FOR DETAILED VERIFICATION
TITLE	4	SIMULATION PERFORMED FOR PERIOD 400-2100 SEPTEMBER 12, 1969
END TITLE		

CARD TYPE	CARD NO	DESCRIPTION	TYPE OF INPUT/OUTPUT CARD, TAPE, BOTH, OR NONE	TAPE NO
FILE A	1	READ BASIC CELL INPUT DATA FROM	CARD	0
FILE A	2	READ INITIAL HYDRODYNAMICS FROM	CARD	0
FILE A	3	COMPUTE AND SAVE NET VELOCITIES ON	NONE	0
FILE A	4	COMPUTE AND SAVE NET FLOWS ON	NONE	0
FILE A	5	COMPUTE AND SAVE DISPERSION COEF. ON	NONE	0
FILE A	6	STORE ENDING VALUES OF HYDRODYNAMICS ON	CARD	0
FILE A	7	STORE INSTANTANEOUS HYDRODYNAMICS ON	TAPE	2
FILE A	8	WRITE/READ INPUTS FOR FINE GRID MODEL ON	TAPE	1
FILE A	9	STORE COARSE GRID DATA FOR FINE GRID ON	NONE	0
ENDFILE A				

CARD TYPE	CARD NO	DESCRIPTION	VALUE
FILE B	1	MODEL TYPE (1=COARSE PROD, 2=FINE PROD, 3=COARSE NON-PROD)	2.0
FILE B	2	PRINT INPUT DATA (1=NO PRINT, 2=W/MANN, N, 3=W/O MANN, N)	2.0
FILE B	3	NUMBER OF STATIONS FOR WHICH PLOTS ARE DESIRED	6.0
FILE B	4	TOTAL REAL TIME FOR OPERATION OF MODEL (HOURS)	17.0
FILE B	5	START REAL TIME FOR OPERATION OF MODEL (HOURS)	4.0
FILE B	6	REAL TIME INT. FOR STORING INSTANTANEOUS VEL. (MINUTES)	30.0
FILE B	7	REAL TIME PERIOD OF TIDAL CYCLE (HOURS)	12.5
FILE B	8	INITIAL WIND MAGNITUDE (KNOTS)	4.0
FILE B	9	DIRECTION FROM WHICH INITIAL WIND BLOWS (CLOCKWISE FROM N)	20.0
FILE B	10	AVERAGE PRECIPITATION RATE (INCHES/DAY)	.0
FILE B	11	AVERAGE EVAPORATION RATE (INCHES/DAY)	.0
FILE B	12	ANGLE BETWEEN NORTH AND X-AXIS (DEG. CLOCKWISE FROM N.)	48.0
FILE B	13	TOTAL NUMBER OF COMPUTATIONAL ELEMENTS IN X-DIRECTION	33.0
FILE B	14	TOTAL NUMBER OF COMPUTATIONAL ELEMENTS IN Y-DIRECTION	30.0
FILE B	15	GRID SIZE OF COMPUTATIONAL ELEMENTS (FEET)	300.0
FILE B	16	PROGRAM COMPUTATIONAL TIME STEP (SECONDS)	5.0
FILE B	17	LATITUDE OF ESTUARINE SYSTEM (DEGREES)	34.2
FILE B	18	NUMBER OF OUTPUT SETS (HOURS) PRINTED PER PAGE	6.0
FILE B	19	COMPUTE NET FLOWS BUT DO NOT STORE (1=YES, 2=NO)	2.0
FILE B	20	DIFFERENCE BETWEEN MSL AND INPUT DATUM (FEET)	1.3
ENDFILE B			

ENDFILE C BASIC CELL DATA

TWO DIMENSIONAL HYDRODYNAMIC MODEL OF MASONBORO INLET (N. CAROLINA)
MODEL STUDY FOR COASTAL ENGINEERING RESEARCH CENTER (CORPS OF ENGRS)
RUN MADE USING FINE GRID MODEL FOR DETAILED VERIFICATION
SIMULATION PERFORMED FOR PERIOD 400-2100 SEPTEMBER 12, 1969

MODEL-OPERATION INFORMATION

BASIC CELL INPUT DATA READ FROM CARDS

INITIAL HYDRODYNAMICS READ FROM CARDS

ALL INPUT DATA (EXCLUDING INITIAL HYDRODYNAMICS) PRINTED AND LABELED

TIDAL AMPLITUDES AND FLOWS WERE COMPUTED AND PRINTED FOR SELECTED CELLS

NET FLOWS WERE NOT COMPUTED

NET VELOCITIES WERE NOT COMPUTED

AVERAGE VELOCITIES AND DISPERSION COEFFICIENTS WERE NOT PUNCHED ON CARDS OR STORED ON TAPE

INSTANTANEOUS VELOCITIES WERE STORED ON TAPE UNIT NO. 2 AT 30.0 MINUTE TIME INTERVALS

ENDING VALUES OF HYDRODYNAMICS WERE PUNCHED ON CARDS

TIDAL AMPLITUDE PLOTS WERE MADE FOR 6 SELECTED STATIONS IN BAY

MODEL WAS OPERATED TO SIMULATE 17.0 HOURS OF REAL TIME

FINE GRID MODEL

MODEL DIMENSIONS AND CHARACTERISTICS

NUMBER OF CELLS IN X-DIRECTION = 33

NUMBER OF CELLS IN Y-DIRECTION = 30

TOTAL NUMBER OF CELLS IN MODEL = 990

WIDTH OF EACH CELL = 300.0 FEET

NUMBER OF TIDAL EXCITATION CELLS = 0

NUMBER OF SUBMERGED BARRIERS = 11

NUMBER OF EXTERNAL FLOW SOURCES = 47

COMPUTATIONAL TIME INCREMENT = .083 MINUTES

PERIOD OF TIDAL CYCLE = 12.5 HOURS

STATION LOCATIONS FOR TIME PRINT-OUT OF HYDRODYNAMICS

STATION NUMBER 1	I21J20	I = 21	J = 20
STATION NUMBER 2	I6J17	I = 6	J = 17
STATION NUMBER 3	I32J23	I = 32	J = 23
STATION NUMBER 4	I15J25	I = 15	J = 25
STATION NUMBER 5	I20J29	I = 20	J = 29
STATION NUMBER 6	I20J10	I = 20	J = 10
STATION NUMBER 7	I19J10	I = 19	J = 10
STATION NUMBER 8	I17J17	I = 17	J = 17
STATION NUMBER 9	I18J17	I = 18	J = 17
STATION NUMBER 10	I19J17	I = 19	J = 17
STATION NUMBER 11	I5J18	I = 5	J = 18
STATION NUMBER 12	I5J19	I = 5	J = 19
STATION NUMBER 13	I16J24	I = 16	J = 24
STATION NUMBER 14	I17J24	I = 17	J = 24
STATION NUMBER 15	I29J22	I = 29	J = 22
STATION NUMBER 16	I29J23	I = 29	J = 23
STATION NUMBER 17	I29J24	I = 29	J = 24
STATION NUMBER 18	I30J25	I = 30	J = 25
STATION NUMBER 19	I16J17	I = 16	J = 17
STATION NUMBER 20	I4J24	I = 4	J = 24

STATION LOCATIONS FOR TIME PLOTS OF HYDRODYNAMICS

STATION NUMBER 1	I21J20	I = 21	J = 20
STATION NUMBER 2	I6J17	I = 6	J = 17
STATION NUMBER 3	I32J23	I = 32	J = 23
STATION NUMBER 4	I15J25	I = 15	J = 25
STATION NUMBER 5	I20J29	I = 20	J = 29
STATION NUMBER 6	I20J10	I = 20	J = 10

INITIAL WIND CONDITIONS AND RAINFALL AND EVAPORATION RATES

WIND VELOCITY = 4.0 KNOTS
WIND ANGLE = 20.0 DEGREES
RAINFALL RATE = .000 IN./DAY
EVAPORATION RATE = .000 IN./DAY

EXTERNAL FLOW LOCATIONS AND QUANTITIES

INFLOW NUMBER 1	I = 9	J = 4	QINFLO = .0 CFS
INFLOW NUMBER 2	I = 10	J = 4	QINFLO = .0 CFS
INFLOW NUMBER 3	I = 11	J = 4	QINFLO = .0 CFS

INFLOW NUMBER 4	I = 12	J = 4	QINFLO =	.0 CFS
INFLOW NUMBER 5	I = 13	J = 4	QINFLO =	.0 CFS
INFLOW NUMBER 6	I = 14	J = 4	QINFLO =	.0 CFS
INFLOW NUMBER 7	I = 15	J = 4	QINFLO =	.0 CFS
INFLOW NUMBER 8	I = 16	J = 4	QINFLO =	.0 CFS
INFLOW NUMBER 9	I = 17	J = 4	QINFLO =	.0 CFS
INFLOW NUMBER 10	I = 18	J = 4	QINFLO =	.0 CFS
INFLOW NUMBER 11	I = 19	J = 4	QINFLO =	.0 CFS
INFLOW NUMBER 12	I = 8	J = 5	QINFLO =	.0 CFS
INFLOW NUMBER 13	I = 8	J = 6	QINFLO =	.0 CFS
INFLOW NUMBER 14	I = 8	J = 7	QINFLO =	.0 CFS
INFLOW NUMBER 15	I = 8	J = 8	QINFLO =	.0 CFS
INFLOW NUMBER 16	I = 8	J = 9	QINFLO =	.0 CFS
INFLOW NUMBER 17	I = 8	J = 10	QINFLO =	.0 CFS
INFLOW NUMBER 18	I = 8	J = 11	QINFLO =	.0 CFS
INFLOW NUMBER 19	I = 8	J = 12	QINFLO =	.0 CFS
INFLOW NUMBER 20	I = 21	J = 13	QINFLO =	.0 CFS
INFLOW NUMBER 21	I = 21	J = 14	QINFLO =	.0 CFS
INFLOW NUMBER 22	I = 21	J = 15	QINFLO =	.0 CFS
INFLOW NUMBER 23	I = 1	J = 16	QINFLO =	.0 CFS
INFLOW NUMBER 24	I = 1	J = 17	QINFLO =	.0 CFS

INFLOW NUMBER 25	I = 1	J = 18	QINFLO =	.0 CFS
INFLOW NUMBER 26	I = 1	J = 19	QINFLO =	.0 CFS
INFLOW NUMBER 27	I = 32	J = 22	QINFLO =	.0 CFS
INFLOW NUMBER 28	I = 4	J = 23	QINFLO =	.0 CFS
INFLOW NUMBER 29	I = 32	J = 23	QINFLO =	.0 CFS
INFLOW NUMBER 30	I = 4	J = 24	QINFLO =	.0 CFS
INFLOW NUMBER 31	I = 32	J = 24	QINFLO =	.0 CFS
INFLOW NUMBER 32	I = 4	J = 25	QINFLO =	.0 CFS
INFLOW NUMBER 33	I = 20	J = 25	QINFLO =	.0 CFS
INFLOW NUMBER 34	I = 29	J = 25	QINFLO =	.0 CFS
INFLOW NUMBER 35	I = 31	J = 25	QINFLO =	.0 CFS
INFLOW NUMBER 36	I = 32	J = 25	QINFLO =	.0 CFS
INFLOW NUMBER 37	I = 32	J = 25	QINFLO =	.0 CFS
INFLOW NUMBER 38	I = 20	J = 26	QINFLO =	.0 CFS
INFLOW NUMBER 39	I = 20	J = 27	QINFLO =	.0 CFS
INFLOW NUMBER 40	I = 12	J = 28	QINFLO =	.0 CFS
INFLOW NUMBER 41	I = 13	J = 28	QINFLO =	.0 CFS
INFLOW NUMBER 42	I = 14	J = 28	QINFLO =	.0 CFS
INFLOW NUMBER 43	I = 15	J = 28	QINFLO =	.0 CFS
INFLOW NUMBER 44	I = 16	J = 28	QINFLO =	.0 CFS
INFLOW NUMBER 45	I = 20	J = 28	QINFLO =	.0 CFS
INFLOW NUMBER 46	I = 20	J = 29	QINFLO =	.0 CFS

INFLOW NUMBER 47 I = 20 J = 30 QINFLO = .0 CFS

SUBMERGED BARRIER LOCATIONS, DISCHARGE COEFFICIENTS, AND MSL ELEVATIONS

BARRIER NO.	1	I = 19	J = 10	TOP	BOUNDARY	COEFFICIENT = .90	ELEVATION = -21.2 FEET
BARRIER NO.	2	I = 20	J = 10	TOP	BOUNDARY	COEFFICIENT = .90	ELEVATION = -16.3 FEET
BARRIER NO.	3	I = 17	J = 17	TOP	BOUNDARY	COEFFICIENT = 1.00	ELEVATION = -21.2 FEET
BARRIER NO.	4	I = 18	J = 17	TOP	BOUNDARY	COEFFICIENT = 1.00	ELEVATION = -16.2 FEET
BARRIER NO.	5	I = 19	J = 17	TOP	BOUNDARY	COEFFICIENT = .90	ELEVATION = -5.2 FEET
BARRIER NO.	6	I = 5	J = 18	SIDE	BOUNDARY	COEFFICIENT = .90	ELEVATION = -6.2 FEET
BARRIER NO.	7	I = 5	J = 19	SIDE	BOUNDARY	COEFFICIENT = .90	ELEVATION = -4.2 FEET
BARRIER NO.	8	I = 29	J = 22	SIDE	BOUNDARY	COEFFICIENT = .90	ELEVATION = -19.2 FEET
BARRIER NO.	9	I = 29	J = 23	SIDE	BOUNDARY	COEFFICIENT = .90	ELEVATION = -16.2 FEET
BARRIER NO.	10	I = 16	J = 24	TOP	BOUNDARY	COEFFICIENT = .90	ELEVATION = -10.2 FEET
BARRIER NO.	11	I = 17	J = 24	TOP	BOUNDARY	COEFFICIENT = .90	ELEVATION = -15.2 FEET

GULF TIDAL DISCHARGE COEFFICIENTS AND CELL TIDE ASSIGNMENTS

TIDAL CELL 1 I = 0 J = 0 COEFFICIENT = .00 TIDE = TIDE0

DATA FOR CORIOLIS ACCELERATION

ANGULAR ROTATION OF EARTH = .0000729 RAD./SEC.

LATITUDE OF BAY = 34.20 DEGREES

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

.0000	.03850	.03283	.03283	.04350	.02950	.02616
.03216	.00000	.00000	.00000	.00000	.00000	.00000
.00000	.00000	.00000	.00000	.00000	.00000	.00000

[illegible]

J =
16
.03850 .04350 .04850 .00000 .05350 .05850 .06350 .00000
.03483 .00000 .00000 .00000 .05350 .02816 .02216 .03350
.00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000
.03850 .00000 .00000 .00000 .00000 .00000 .00000 .00000
.00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000

J	=	17					
.03483	.03416	.03483	.03483	.04850	.05350	.05350	.05850
.05850	.00000	.05350	.05350	.00000	.04850	.02349	.03216
.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
.00000	.00000	.00000	.00000

$\gamma = 18$							
.03483	.03483	.03416	.03350	.03350	.03350	.03350	.03350
.03416	.04350	.04350	.03850	.03216	.02216	.02683	.03416
.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
.00000	.00000	.00000	.00000	.00000	.00000	.00000	.00000
.00000	.00000	.00000					

J	=	19						
.04850	.	.04350	.03850	.03483	.03483	.03450	.03416	.03350
.03283	.	.03283	.03283	.03283	.03350	.02149	.02616	.03850
.00000	.	.00000	.00000	.00000	.00000	.00000	.00000	.00000
.00000	.	.00000	.00000	.00000	.00000	.00000	.00000	.00000
.00000	.	.00000	.00000	.00000	.00000	.00000	.00000	.00000
.00000	.	.00000	.00000	.00000	.00000	.00000	.00000	.00000
.00000	.	.00000	.00000	.00000	.00000	.00000	.00000	.00000

J = 20	.00000	.00000	.00000	.00000	.05850	.05350	.05350
	.04850	.04350	.04350	.04350	.03350	.02616	.03016
	.02883	.03016	.00000	.00000	.00000	.00000	.00000
	.00000	.00000	.00000	.00000	.00000	.00000	.00000

[illegible]

.03283 .03016 .02950 .03016 .03016 .03150 .03350 .03416 .00000 .00000

J = 22
.00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000
.00000 .04850 .04850 .04850 .03150 .02816 .02816 .03350 .03350 .03416
.03483 .03850 .03283 .02950 .02883 .02683 .02683 .02549 .02483 .02483
.02616 .03016 .00000

J = 23
.00000 .00000 .00000 .05850 .05850 .05850 .05850 .05850 .05850 .05850
.00000 .05350 .04850 .04850 .03083 .02749 .02749 .04350 .04350 .03416
.03350 .03350 .03416 .03150 .02950 .02950 .02683 .02683 .02683 .02683
.02683 .02683 .00000

J = 24
.00000 .00000 .00000 .05850 .05850 .05850 .05850 .05850 .05850 .05850
.00000 .00000 .00000 .05850 .04850 .02749 .02749 .04850 .04850 .00000
.00000 .00000 .00000 .00000 .00000 .00000 .00000 .03850 .03850 .03850
.03850 .03216 .00000

J = 25
.00000 .00000 .00000 .05850 .05850 .05850 .05850 .05850 .05850 .05850
.05850 .05850 .06350 .05850 .03083 .02616 .02616 .00000 .00000 .06350
.00000 .00000 .00000 .00000 .00000 .00000 .00000 .04350 .04350 .04350
.04350 .04850 .00000

J = 26
.00000 .00000 .00000 .00000 .00000 .00000 .00000 .05850 .05850 .05850
.05850 .05850 .05850 .03016 .02483 .02483 .02483 .05850 .05850 .05850
.00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000
.00000 .00000 .00000

J = 27
.00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000
.00000 .05350 .05850 .03850 .02483 .02483 .02483 .06350 .05350 .05350
.00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000
.00000 .00000 .00000

J = 28
.00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000
.00000 .04850 .04850 .02950 .02483 .02483 .02483 .04850 .05350 .05850
.00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000 .00000

TIME HOURS	SEA TIDE	HYDRO- DYNAMICS	PRINTOUT STATIONS THROUGHOUT SYSTEM									
			I21J20	I6J17	I32J23	I15J25	I20J29	I20J10	I19J10	I17J17	I18J17	I19J17
4.00	.000	MSL TIDE	.700	.401	.380	.521	.700	.863	.863	.699	.699	.699
	.000	XFLO CFS	5828.	-129.	6212.	A2.	0.	0.	-2706.	-12244.	-6241.	-2359.
	.000	YFLO CFS	-205.	-171.	1668.	585.	15.	11031.	11153.	13032.	13795.	6827.
	.000	GRD ELEV	-13.30	-.30	-16.30	-2.30	.70	-21.30	-21.30	-21.30	-21.30	-28.30
	.000	WIND SPEED = 4.0 KNOTS				WIND DIRECTION = 208.0 DEGREES W.R.T. X-AXIS						
5.00	.000	MSL TIDE	1.659	.579	1.401	1.648	1.495	2.343	2.324	1.933	1.968	1.980
	.000	XFLO CFS	6074.	-173.	5963.	53.	0.	0.	-2820.	-13271.	-7379.	-1658.
	.000	YFLO CFS	-242.	-209.	2499.	755.	80.	12243.	12127.	15600.	16406.	4831.
	.000	GRD ELEV	-13.30	-.30	-16.30	-2.30	.70	-21.30	-21.30	-21.30	-21.30	-28.30
	.000	WIND SPEED = 4.0 KNOTS				WIND DIRECTION = 208.0 DEGREES W.R.T. X-AXIS						
6.00	.000	MSL TIDE	2.458	1.446	2.197	2.428	2.374	3.232	3.215	2.772	2.819	2.845
	.000	XFLO CFS	6268.	-441.	6444.	-69.	52.	0.	-2698.	-14989.	-8566.	-2299.
	.000	YFLO CFS	-552.	-272.	2770.	1260.	70.	12882.	12760.	17912.	19006.	5905.
	.000	GRD ELEV	-13.30	-.30	-16.30	-2.30	.70	-21.30	-21.30	-21.30	-21.30	-28.30
	.000	WIND SPEED = 4.0 KNOTS				WIND DIRECTION = 208.0 DEGREES W.R.T. X-AXIS						
7.00	.000	MSL TIDE	3.000	2.109	2.835	2.990	2.953	3.605	3.592	3.241	3.285	3.312
	.000	XFLO CFS	5145.	-643.	5480.	-235.	84.	0.	-2551.	-13789.	-7993.	-2231.
	.000	YFLO CFS	-722.	-300.	2379.	1355.	98.	11498.	11220.	16723.	17691.	5428.
	.000	GRD ELEV	-13.30	-.30	-16.30	-2.30	.70	-21.30	-21.30	-21.30	-21.30	-28.30
	.000	WIND SPEED = 4.0 KNOTS				WIND DIRECTION = 208.0 DEGREES W.R.T. X-AXIS						
8.00	.000	MSL TIDE	3.242	2.750	3.269	3.256	3.263	3.329	3.325	3.269	3.279	3.288
	.000	XFLO CFS	1265.	-610.	1410.	-252.	-21.	0.	-1467.	-7480.	-4631.	-897.
	.000	YFLO CFS	-1039.	-292.	825.	559.	-14.	5696.	5277.	8259.	8472.	1508.
	.000	GRD ELEV	-13.30	-.30	-16.30	-2.30	.70	-21.30	-21.30	-21.30	-21.30	-28.30
	.000	WIND SPEED = 4.0 KNOTS				WIND DIRECTION = 208.0 DEGREES W.R.T. X-AXIS						
9.00	.000	MSL TIDE	3.048	3.097	3.191	3.115	3.198	2.609	2.616	2.768	2.765	2.765
	.000	XFLO CFS	-2938.	294.	-4953.	-1355.	-91.	0.	-243.	3170.	3432.	1533.
	.000	YFLO CFS	-2633.	67.	-2566.	256.	-85.	-9003.	-9731.	-14752.	-11264.	-3844.
	.000	GRD ELEV	-13.30	-.30	-16.30	-2.30	.70	-21.30	-21.30	-21.30	-21.30	-28.30
	.000	WIND SPEED = 4.0 KNOTS				WIND DIRECTION = 208.0 DEGREES W.R.T. X-AXIS						

TIME HOURS	SEA TIDE	HYDRO- DYNAMICS	PRINTOUT STATIONS THROUGHOUT SYSTEM									
			I21J20	I6J17	I32J23	I15J25	I20J29	I20J10	I19J10	I17J17	I18J17	I19J17
10.00	.000 .000 .000 .000 .000	MSL TIDE XFLO CFS YFLO CFS GRD ELEV WIND SPEED = 4.0 KNOTS	2.423 -3730. -3541. -13.30 -.30	2.750 460. 358. -30 4.0	2.649 -6146. -2514. -16.30	2.544 -1294. 188. -2.30	2.719 -66. -82. .70	1.416 0. -14339. -21.30	1.431 1040. -16055. -21.30	1.814 2702. -22367. -21.30	1.807 5048. -17452. -28.30	1.810 1730. -5517. -8.30
11.00	.000 .000 .000 .000 .000	MSL TIDE XFLO CFS YFLO CFS GRD ELEV WIND SPEED = 4.0 KNOTS	1.705 -3723. -4510. -13.30 -.30	2.178 368. 362. -30 4.0	2.014 -7224. -2321. -16.30	1.813 -1022. 2. -2.30	2.019 -11. -29. .70	.145 0. -17470. -21.30	.177 1116. -19369. -21.30	.833 2932. -24148. -21.30	.819 5725. -18639. -28.30	.828 1681. -6098. -8.30
12.00	.000 .000 .000 .000 .000	MSL TIDE XFLO CFS YFLO CFS GRD ELEV WIND SPEED = 4.0 KNOTS	.903 -3351. -4871. -13.30 -.30	1.495 211. 281. -30 4.0	1.236 -7431. -1910. -16.30	.976 -703. -2. -2.30	1.223 0. -16. .70	-.821 0. -18021. -21.30	-.775 1006. -19704. -21.30	.016 3288. -22242. -21.30	-.013 5480. -16068. -28.30	-.008 1346. -5336. -8.30
13.00	.000 .000 .000 .000 .000	MSL TIDE XFLO CFS YFLO CFS GRD ELEV WIND SPEED = 4.0 KNOTS	.110 -3296. -4065. -13.30 -.30	.769 69. 140. -30 4.0	.388 -5644. -3601. -16.30	.133 -196. -151. -2.30	.887 0. -3. .70	-1.285 0. -15669. -21.30	-1.249 876. -16865. -21.30	-.605 2162. -18528. -21.30	-.632 3944. -13857. -28.30	-.632 799. -4192. -8.30
14.00	.000 .000 .000 .000 .000	MSL TIDE XFLO CFS YFLO CFS GRD ELEV WIND SPEED = 4.0 KNOTS	-.567 -2181. -2633. -13.30 -.30	.059 2. 2. -30 4.0	-.467 -2620. -2974. -16.30	-.557 -7. -90. -2.30	.810 0. -1. .70	-1.180 0. -10333. -21.30	-1.162 586. -11063. -21.30	-.893 1054. -12225. -21.30	-.904 2491. -9166. -28.30	-.905 453. -2680. -8.30
15.00	.000 .000 .000 .000 .000	MSL TIDE XFLO CFS YFLO CFS GRD ELEV WIND SPEED = 4.0 KNOTS	-.634 886. -221. -13.30 -.30	-.300 0. 0. -30 4.0	-.710 2051. 262. -16.30	-.625 -29. 17. -2.30	.772 0. -1. .70	-.544 0. -597. -21.30	-.545 624. -722. -21.30	-.589 -1371. -274. -21.30	-.588 339. 141. -28.30	-.585 -114. -15. -8.30

TIME HOURS	SEA TIDE	HYDRO- DYNAMICS	PRINTOUT STATIONS THROUGHOUT SYSTEM									
			I21J20	I6J17	I32J23	I15J25	I20J29	I20J10	I19J10	I17J17	I18J17	I19J17
16.00	.000	MSL TIDE	.111	-.300	-.122	.092	.756	.570	.557	.301	.313	.309
	.000	XFLO CFS	5042.	0.	5516.	64.	0.	0.	-2438.	-8810.	-4519.	-565.
	.000	YFLO CFS	209.	0.	2032.	214.	-0.	9780.	10162.	10781.	11028.	2799.
	.000	GRD ELEV	-13.30	-.30	-16.30	-2.30	.70	-21.30	-21.30	-21.30	-28.30	-8.30
	.000	WIND SPEED =	4.0 KNOTS						208.0 DEGREES	W.R.T.	X-AXIS	
17.00	.000	MSL TIDE	1.175	.076	.768	1.164	.807	2.049	2.028	1.544	1.579	1.583
	.000	XFLO CFS	7361.	-59.	7269.	92.	0.	0.	-3187.	-14509.	-7914.	-1577.
	.000	YFLO CFS	-95.	-119.	3062.	655.	0.	13743.	13709.	16712.	17684.	5317.
	.000	GRD ELEV	-13.30	-.30	-16.30	-2.30	.70	-21.30	-21.30	-21.30	-28.30	-8.30
	.000	WIND SPEED =	4.0 KNOTS						208.0 DEGREES	W.R.T.	X-AXIS	
18.00	.000	MSL TIDE	2.170	1.151	1.890	2.129	2.084	2.986	2.968	2.501	2.548	2.571
	.000	XFLO CFS	6591.	-341.	6623.	29.	16.	0.	-2660.	-15232.	-8644.	-2171.
	.000	YFLO CFS	-518.	-283.	2835.	1135.	38.	13385.	13381.	18040.	19157.	5857.
	.000	GRD ELEV	-13.30	-.30	-16.30	-2.30	.70	-21.30	-21.30	-21.30	-28.30	-8.30
	.000	WIND SPEED =	4.0 KNOTS						208.0 DEGREES	W.R.T.	X-AXIS	
19.00	.000	MSL TIDE	2.812	2.163	2.569	2.777	2.729	3.538	3.523	3.108	3.156	3.183
	.000	XFLO CFS	6090.	-565.	6491.	-153.	71.	0.	-2612.	-14752.	-8482.	-2373.
	.000	YFLO CFS	-655.	-296.	2748.	1457.	87.	12536.	12392.	17820.	19035.	6093.
	.000	GRD ELEV	-13.30	-.30	-16.30	-2.30	.70	-21.30	-21.30	-21.30	-28.30	-8.30
	.000	WIND SPEED =	4.0 KNOTS						208.0 DEGREES	W.R.T.	X-AXIS	
20.00	.000	MSL TIDE	3.203	2.866	3.070	3.188	3.160	3.650	3.640	3.383	3.415	3.435
	.000	XFLO CFS	4712.	-579.	5150.	-222.	84.	0.	-2227.	-11880.	-6866.	-1948.
	.000	YFLO CFS	-680.	-279.	2185.	1316.	95.	10007.	9731.	14437.	15477.	4952.
	.000	GRD ELEV	-13.30	-.30	-16.30	-2.30	.70	-21.30	-21.30	-21.30	-28.30	-8.30
	.000	WIND SPEED =	4.0 KNOTS						208.0 DEGREES	W.R.T.	X-AXIS	
21.00	.000	MSL TIDE	3.136	3.135	3.244	3.141	3.173	2.951	2.952	3.031	3.023	3.016
	.000	XFLO CFS	-1429.	64.	-2211.	54.	-82.	0.	-1186.	-1270.	1280.	965.
	.000	YFLO CFS	-1854.	-80.	-613.	-521.	-84.	-2806.	-2468.	-4437.	-5155.	-2013.
	.000	GRD ELEV	-13.30	-.30	-16.30	-2.30	.70	-21.30	-21.30	-21.30	-28.30	-8.30
	.000	WIND SPEED =	4.0 KNOTS						208.0 DEGREES	W.R.T.	X-AXIS	

TIME HOURS	SEA TIDE	HYDRO- DYNAMICS	PRINTOUT STATIONS THROUGHOUT SYSTEM									
			I5J18	I5J19	I16J24	I17J24	I29J22	I29J23	I29J24	I30J25	I16J17	I4J24
4.00	.000	MSL TIDE XFL0 CFS YFL0 CFS GRD ELEV WIND SPEED = 4.0 KNOTS	.401 -3945. -395. -6.30 4.0	.401 -2555. 0. -4.30 4.0	.608 -1507. 5430. -10.30	.663 -709. 8316. -15.30	.380 5389. 1672. -19.30	.380 5490. 2103. -16.30	.380 2175. 499. -3.30	.696 510. 0. -2.30	.613 -4243. 3960. -1.30	.700 0. 0. -1.30
5.00	.000	MSL TIDE XFL0 CFS YFL0 CFS GRD ELEV WIND SPEED = 4.0 KNOTS	.367 -5495. -561. -6.30 4.0	.410 -3545. 0. -4.30 4.0	1.731 -1441. 5250. -10.30	1.735 -542. 8857. -15.30	1.453 6633. 1082. -19.30	1.456 5680. 1356. -16.30	1.457 1501. 887. -3.30	1.416 686. 0. -2.30	1.889 -4761. 5200. -1.30	.700 0. 0. -1.30
6.00	.000	MSL TIDE XFL0 CFS YFL0 CFS GRD ELEV WIND SPEED = 4.0 KNOTS	1.197 -6483. -648. -6.30 4.0	1.237 -4431. 0. -4.30 4.0	2.530 -2034. 6285. -10.30	2.538 -1088. 10456. -15.30	2.251 7298. 1438. -19.30	2.254 6265. 1942. -16.30	2.255 1999. 1310. -3.30	2.213 1036. 0. -2.30	2.706 -5813. 6470. -1.30	.700 3. 0. -1.30
7.00	.000	MSL TIDE XFL0 CFS YFL0 CFS GRD ELEV WIND SPEED = 4.0 KNOTS	1.867 -6820. -664. -6.30 4.0	1.900 -4836. 0. -4.30 4.0	3.062 -2077. 5609. -10.30	3.070 -1199. 9351. -15.30	2.868 6291. 1408. -19.30	2.871 5412. 1975. -16.30	2.871 1945. 1352. -3.30	2.846 1093. 0. -2.30	3.179 -5551. 6349. -1.30	.700 78. 0. -1.30
8.00	.000	MSL TIDE XFL0 CFS YFL0 CFS GRD ELEV WIND SPEED = 4.0 KNOTS	2.632 -5195. -488. -6.30 4.0	2.645 -3796. 0. -4.30 4.0	3.259 -1134. 1973. -10.30	3.262 -463. 3787. -15.30	3.262 1666. 615. -19.30	3.263 1432. 751. -16.30	3.264 613. 460. -3.30	3.266 337. 0. -2.30	3.254 -2967. 3330. -1.30	.700 32. 0. -1.30
9.00	.000	MSL TIDE XFL0 CFS YFL0 CFS GRD ELEV WIND SPEED = 4.0 KNOTS	3.116 1421. 120. -6.30 4.0	3.115 1123. 0. -4.30 4.0	3.044 654. -5958. -10.30	3.038 335. -8277. -15.30	3.135 -6257. -1432. -19.30	3.135 -5398. -2621. -16.30	3.144 -954. -969. -3.30	3.173 -715. 0. -2.30	2.751 1250. -2555. -1.30	.700 187. 0. -1.30

TIME HOURS	SEA TIDE	HYDRO- DYNAMICS	PRINTOUT STATIONS THROUGHOUT SYSTEM									
			15J18	15J19	116J24	117J24	129J22	129J23	129J24	130J25	116J17	14J24
10.00	.000	MSL TIDE	2.857	2.857	2.426	2.406	2.562	2.561	2.573	2.616	1.754	.700
	.000	XFLO CFS	4423.	3438.	555.	430.	-7515.	-6827.	-851.	-994.	-1240.	1.
	.000	YFLO CFS	587.	0.	-6847.	-10573.	-1676.	-2932.	-1037.	0.	-611.	0.
	.000	GRD ELEV	-6.30	-4.30	-10.30	-15.30	-19.30	-16.30	-3.30	-2.30	-1.30	.70
	.000	WIND SPEED = 4.0 KNOTS								W.R.T.	X-AXIS	
11.00	.000	MSL TIDE	2.325	2.325	1.651	1.631	1.903	1.901	1.916	1.967	.792	.700
	.000	XFLO CFS	4873.	3708.	1355.	355.	-8237.	-7583.	-868.	-873.	-1286.	-36.
	.000	YFLO CFS	650.	0.	-7395.	-11275.	-1676.	-2756.	-876.	0.	-261.	0.
	.000	GRD ELEV	-6.30	-4.30	-10.30	-15.30	-19.30	-16.30	-3.30	-2.30	-1.30	.70
	.000	WIND SPEED = 4.0 KNOTS								W.R.T.	X-AXIS	
12.00	.000	MSL TIDE	1.659	1.660	.798	.792	1.131	1.131	1.154	1.204	.057	.700
	.000	XFLO CFS	4688.	3453.	3054.	424.	-7855.	-7260.	-825.	-603.	664.	0.
	.000	YFLO CFS	619.	0.	-7318.	-10419.	-1375.	-2115.	-552.	0.	-1458.	0.
	.000	GRD ELEV	-6.30	-4.30	-10.30	-15.30	-19.30	-16.30	-3.30	-2.30	-1.30	.70
	.000	WIND SPEED = 4.0 KNOTS								W.R.T.	X-AXIS	
13.00	.000	MSL TIDE	.921	.922	-.012	-.015	.312	.315	.324	.377	-.563	.700
	.000	XFLO CFS	3994.	2809.	2370.	261.	-6824.	-5807.	-328.	-320.	784.	0.
	.000	YFLO CFS	509.	0.	-5943.	-8637.	-857.	-1603.	-625.	0.	-1207.	0.
	.000	GRD ELEV	-6.30	-4.30	-10.30	-15.30	-19.30	-16.30	-3.30	-2.30	-1.30	.70
	.000	WIND SPEED = 4.0 KNOTS								W.R.T.	X-AXIS	
14.00	.000	MSL TIDE	.178	.178	-.623	-.627	-.485	-.484	-.480	-.384	-.873	.700
	.000	XFLO CFS	3029.	2015.	1371.	98.	-4242.	-3166.	248.	-282.	487.	0.
	.000	YFLO CFS	362.	0.	-3804.	-5848.	-398.	-1008.	-837.	0.	-710.	0.
	.000	GRD ELEV	-6.30	-4.30	-10.30	-15.30	-19.30	-16.30	-3.30	-2.30	-1.30	.70
	.000	WIND SPEED = 4.0 KNOTS								W.R.T.	X-AXIS	
15.00	.000	MSL TIDE	-.730	-.729	-.622	-.624	-.685	-.685	-.683	-.613	-.589	.700
	.000	XFLO CFS	35.	41.	627.	25.	1360.	1196.	-46.	-204.	28.	0.
	.000	YFLO CFS	19.	0.	-579.	-891.	-359.	-677.	-761.	0.	73.	0.
	.000	GRD ELEV	-6.30	-4.30	-10.30	-15.30	-19.30	-16.30	-3.30	-2.30	-1.30	.70
	.000	WIND SPEED = 4.0 KNOTS								W.R.T.	X-AXIS	

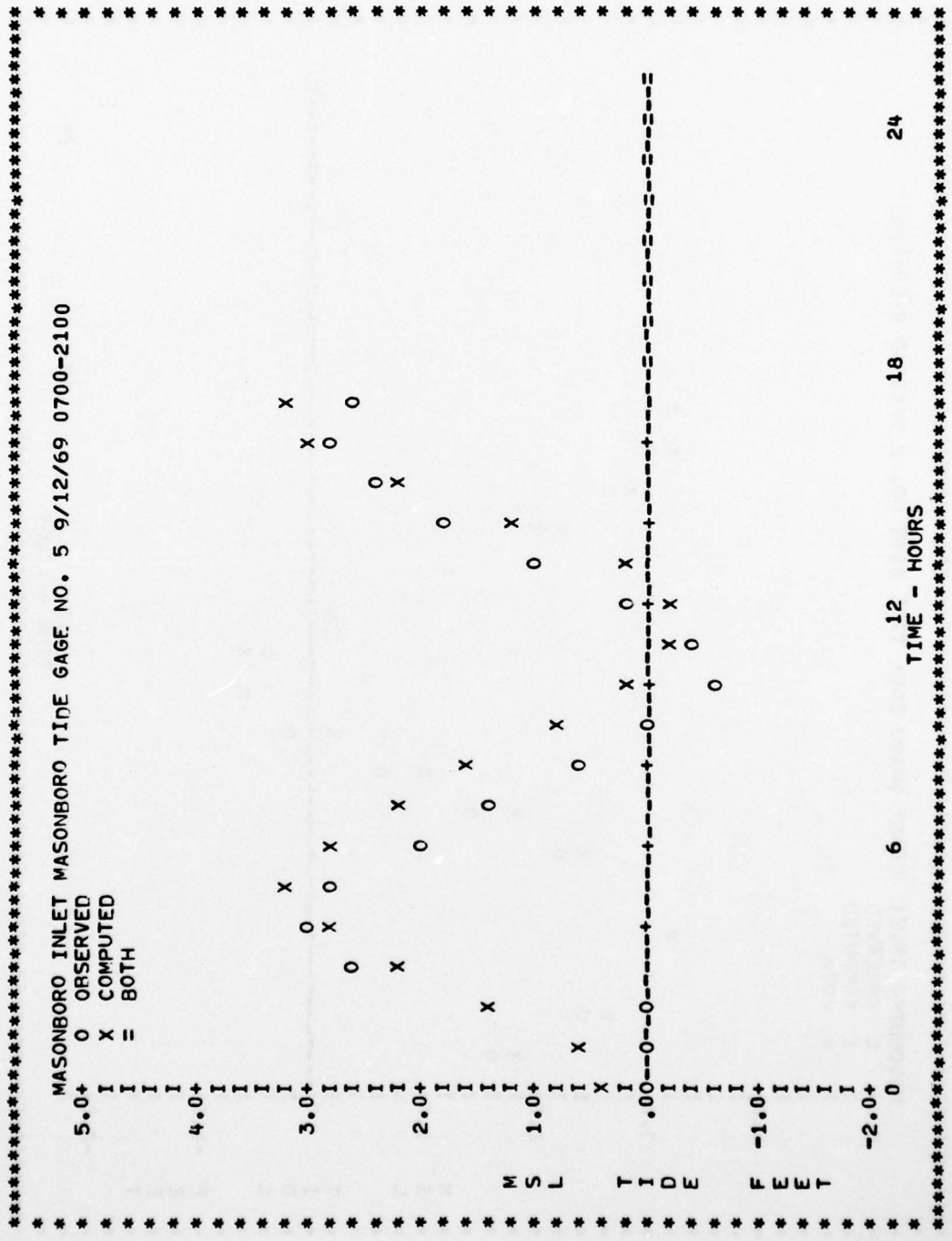
TIME HOURS	SEA TIDE	HYDRO- DYNAMICS	PRINTOUT STATIONS THROUGHOUT SYSTEM									
			15J18	15J19	116J24	117J24	129J22	129J23	129J24	130J25	116J17	14J24
16.00	.000	MSL TIDE	-.683	-.658	.153	.155	-.065	-.066	-.062	-.087	.281	.700
	.000	XFLO CFS	-3177.	-1835.	-603.	218.	5576.	4677.	465.	-11.	-2582.	0.
	.000	YFLO CFS	-311.	0.	3786.	6413.	436.	366.	-297.	0.	2830.	0.
	.000	GRD ELEV	-6.30	-4.30	-10.30	-15.30	-19.30	-16.30	-3.30	-2.30	-1.30	.70
	.000	WIND SPEED = 4.0 KNOTS				WIND DIRECTION = 208.0 DEGREES W.R.T. X-AXIS						
17.00	.000	MSL TIDE	-.144	-.096	1.277	1.282	.848	.851	.853	.784	1.501	.700
	.000	XFLO CFS	-5105.	-3156.	-1380.	-299.	7975.	6817.	1491.	613.	-4891.	0.
	.000	YFLO CFS	-520.	0.	5829.	9872.	1097.	1270.	811.	0.	5271.	0.
	.000	GRD ELEV	-6.30	-4.30	-10.30	-15.30	-19.30	-16.30	-3.30	-2.30	-1.30	.70
	.000	WIND SPEED = 4.0 KNOTS				WIND DIRECTION = 208.0 DEGREES W.R.T. X-AXIS						
18.00	.000	MSL TIDE	.929	.969	2.242	2.249	1.946	1.949	1.951	1.905	2.439	.700
	.000	XFLO CFS	-6045.	-4056.	-1941.	-954.	7454.	6387.	1909.	939.	-5765.	0.
	.000	YFLO CFS	-609.	0.	6432.	10815.	1401.	1824.	1213.	0.	6333.	0.
	.000	GRD ELEV	-6.30	-4.30	-10.30	-15.30	-19.30	-16.30	-3.30	-2.30	-1.30	.70
	.000	WIND SPEED = 4.0 KNOTS				WIND DIRECTION = 208.0 DEGREES W.R.T. X-AXIS						
19.00	.000	MSL TIDE	1.992	2.014	2.878	2.887	2.620	2.623	2.624	2.586	3.042	.700
	.000	XFLO CFS	-5854.	-4162.	-2235.	-1289.	7332.	6300.	2156.	1171.	-5878.	55.
	.000	YFLO CFS	-566.	0.	6489.	10793.	1537.	2128.	1439.	0.	6597.	0.
	.000	GRD ELEV	-6.30	-4.30	-10.30	-15.30	-19.30	-16.30	-3.30	-2.30	-1.30	.70
	.000	WIND SPEED = 4.0 KNOTS				WIND DIRECTION = 208.0 DEGREES W.R.T. X-AXIS						
20.00	.000	MSL TIDE	2.770	2.780	3.247	3.254	3.098	3.100	3.100	3.080	3.338	.700
	.000	XFLO CFS	-4751.	-3489.	-1983.	-1188.	5856.	5039.	1878.	1084.	-4830.	5.
	.000	YFLO CFS	-444.	0.	5196.	8696.	1353.	1912.	1301.	0.	5491.	0.
	.000	GRD ELEV	-6.30	-4.30	-10.30	-15.30	-19.30	-16.30	-3.30	-2.30	-1.30	.70
	.000	WIND SPEED = 4.0 KNOTS				WIND DIRECTION = 208.0 DEGREES W.R.T. X-AXIS						
21.00	.000	MSL TIDE	3.140	3.140	3.125	3.124	3.213	3.213	3.217	3.233	3.037	.700
	.000	XFLO CFS	-475.	-317.	-613.	440.	-3162.	-2611.	-439.	-554.	246.	89.
	.000	YFLO CFS	-51.	0.	-2117.	-3302.	-261.	-733.	-785.	0.	-1365.	0.
	.000	GRD ELEV	-6.30	-4.30	-10.30	-15.30	-19.30	-16.30	-3.30	-2.30	-1.30	.70
	.000	WIND SPEED = 4.0 KNOTS				WIND DIRECTION = 208.0 DEGREES W.R.T. X-AXIS						

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***** MASONBORO INLET COAST GUARD DOCK TIDE GAGE NO. 2 9/12/69 0400-2100 *****
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M S L	T I D E	F E E T
5.0+	I I I I I	0 OBSERVED X COMPUTED = BOTH
4.0+	I I I I I	= =
3.0+	I I I I I	X O X O X O
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1.0+	I I I I I	X O X O
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TIME - HOURS

6 18 24



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MSL TIDE FEET

12 18 24

12	18	24
TIME - HOURS		